SERVICE MANUAL

PM433

marantz®

model PM433

Stereo Pre Main Amplifier

MARANTZ DESIGN AND SERVICE

Using superior design and selected high grade components, MARANTZ company has created the ultimate in stereo sound. Only **original MARANTZ parts** can insure that your MARANTZ product will continue to perform to the specifications for which it is famous.

Parts for your MARANTZ equipment are generally available to our National Marantz Subsidiary or Agent.

ORDERING PARTS:
Parts can be ordered either by mail or by telex. In both cases, MARANTZ part number has to be specified. If you order by mail, fulfil MARANTZ order forms.

MARANTZ S.A.
EUROPEAN PARTS DEPARTMENT
2, Avenue Léopold III
B-7120 PERONNES-lez-BINCHE
BELGIUM
TWX: 57589 SEPLT B

The following information must be supplied to eliminate delays in processing your order:

1. Complete address
2. Complete part numbers and quantities required
3. Description of parts
4. Model number for which part is required
5. Way of shipment
6. Signature: any order form or telex must be signed otherwise such part order will be considered as null and void.

PARTS ORDERING:
Parts may be ordered from the following addresses:

EUROPE

MARANTZ S.A.
European Parts Department
2, Avenue Léopold III
B-7120 Péronnes-lez-Binche
Belgium
Telex: 57589

MARANTZ NORSKE A.S.
Refstadalleen 13
Oslo 5
Norway
Telex: 19659

MARANTZ DENMARK
Bregnerødvej 132b
3460 Birkerød
Denmark
Telex: 39137

MARANTZ GMBH AUSTRIA
Wiedner Hauptstrasse 98
1050 Wien
Austria
Telex: 113583

MARANTZ S.A.
326 Avenue Louise Bte 32
1050 Brussels
Belgium
Telex: 26602

MARANTZ FRANCE
4 Rue Bernard Palissy
92600 Asnières
France
Telex: 611651

MARANTZ BELGIUM
45 Rue Auguste Van Zande
1080 Brussels
Belgium

MARANTZ SVENSKA A.B.
Svartviksvangen 56
Traneberg - Box 12016
16112 Bromma
Sweden
Telex: 13449

MARANTZ GERMANY GMBH
Max Planckstrasse, 22
6072 DREIEICH 1
West Germany
Telex: 4185316

MARANTZ AUDIO U.K. LTD.
Unit 15/16
Saxon Way Industrial Estate
Moor Lane
Harmondsworth UB7 OLW
Great Britain
Telex: 935196

AUSTRALIA

MARANTZ AUSTRALIA PTY., LTD.
32 Cross Street
Brookvale, N.S.W. 2100
Australia
Telex: 24121

All of the above locations are fully equipped to take care of your total service needs. Because various countries have differing configuration requirements, it is necessary that you contact the service facility in your particular country. In the event that there is no service location listed for your country, please, contact the nearest facility for the necessary assistance.

In case of difficulties, do not hesitate to contact the Technical Department at abovementioned address.

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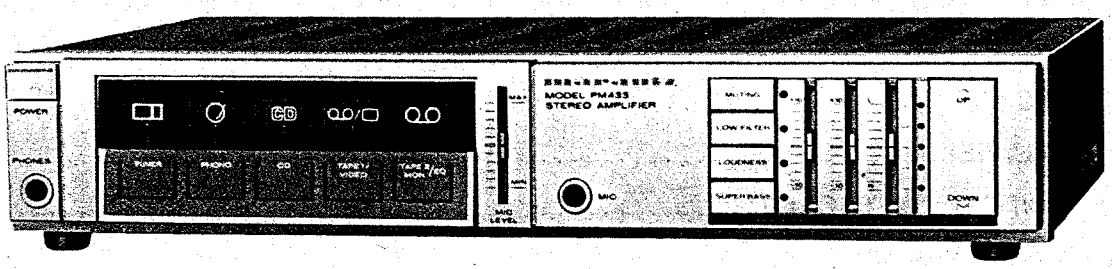
MODEL PM433 STEREO AMPLIFIER



INTRODUCTION

This service manual was prepared for use by Authorized Warranty Staions and contains service information for the Marantz Model PM433 Stereo Amplifier.

Servicing information and voltage data included in this manual are intended for use by knowledgeable and experienced personnel only. All instructions should be read carefully. No attempt should be made to proceed without a good understanding of circuitry operation.

The parts list furnishes complete ordering information. Most replacement parts should be ordered from the Marantz Company. However, a simple description is included for parts which can be obtained locally.

1. FUNCTION SWITCH

The function switches control a high voltage type switching IC (LC7185H) to select one of the four inputs and the tape monitor channel which is selected with the TAPE OUT/MONITOR switch. The TAPE OUT/MONITOR switch controls a high voltage-type switching IC (LC4066BH). The tuner input is automatically selected when the power is turned on.

The signals from the AUX, TUNER and TAPE 1 input terminals are applied to electronic switch QS01. The signals from the PHONO input terminals are equalized and amplified (35 dB) by equalizer amplifier Q401, then applied to electronic switch QS01.

The signals from the TAPE 2 IN terminals are applied to electronic switch QS02, then to QS01. The TAPE 1 OUT terminal circuits are controlled with QS03 so that signals are not fed back to TAPE 1 when TAPE 1 is selected with the function switch.

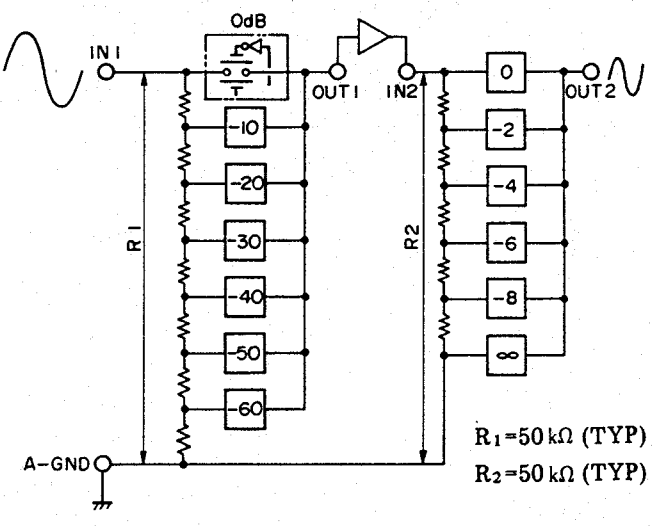
These switching circuits have no backup memory. They are reset with CS02 when the power is turned on and tuner input is selected with CS03, DS01 and DS02.

2. MICROCOMPUTER

The PM433 uses a 4-bit microprocessor (QU03) to control the EASY/REMOTE bus system. QU01/QU02 are EASY/REMOTE bus system switching transistors which are connected to the input port of the microcomputer. The function system is connected to function IC selector switch QS01 in parallel via DU01–DU05.

3. ELECTRIC VOLUME

Resistors connected in series (and which are switched with analog switches) are used for the attenuator. The attenuator consists of two sections: one varies the degree of attenuation in 10 dB steps; the other varies it in 2 dB steps. With this attenuator, overall attenuation can be varied from 0 dB to –66 dB in 2 dB steps. The analog switches are controlled by an internal oscillator, and the degree of attenuation is automatically set to – 40 dB when the power is turned on.



Transistors QG04 and QG05 are switching transistors which enable remote control.
The volume control IC outputs a DC current at one of 13 levels (a multiple of 50 μA) depending on the degree of attenuation. The output signal is applied to the LED driver (QG51), which indicates the output level as one of 5 levels.

4. PREAMPLIFIER

The first stage is for super-bass and loudness control. In this stage, the NF loop includes a transistor impedance device to boost super-low and low frequencies.

Super-Bass: + 8 dB at 50 Hz
Loudness: + 3 dB at 100 Hz

The signal from the volume control passes through QE01, then passes through super-bass and loudness control devices QE03, QE04, QE05 and QE06 and is applied to the tone amplifier. The microphone signal is amplified with QF0101/2. The amplified signal is applied to voltage follower (QF01–1/2). The resulting signal is then applied to both the L and R tone inputs. (PA MIX only)
The 2nd stage of the preamplifier is an NF-type tone control circuit consisting of a single operational amplifier. This stage has a gain of 20 dB and is used for both bass and treble control.
The audio muting switch is an analog switch which is connected to the tone amplifier output, and which attenuates the output level by 20 dB.
The low filter (consisting of CE27 and CE28) has an attenuation curve of 6 dB/octave, attenuating the signal level by – 3 dB at 30 Hz.
An analog switch is also used for switching the super-bass control.

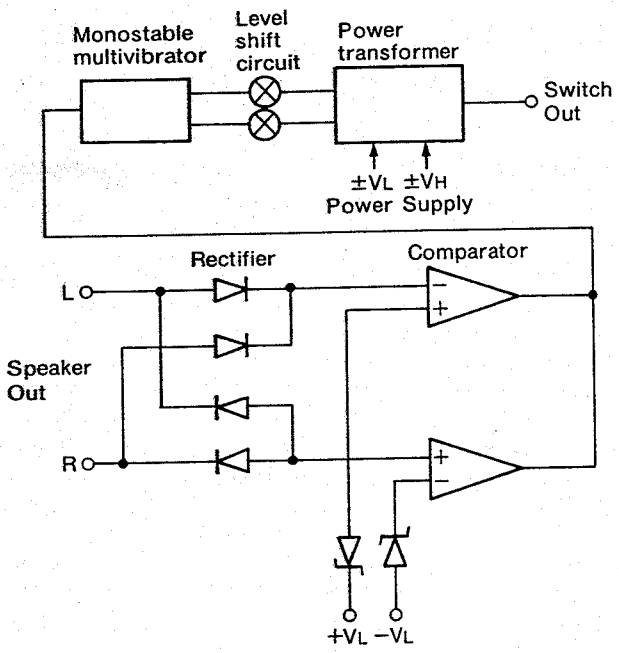
5. MODE SWITCH CONTROLLER

Cyclic-type FF IC TA9130P (QE51) is used to control the super-bass, loudness, muting and low filter switch circuits.
The output level of TA9130P switches between High and Low each time a low level signal is input. The output signal of each flipflop switches an analog switch between ON and OFF. The output signal is also applied to the corresponding indicator via level shift transistor QE53, QE54 or QE56.
The loudness and muting circuits are connected to the external remote control circuit through the microprocessor.
This controller circuit is backed up by a 1000 μF 16 V capacitor (CE56) which will preserve the state of the controller for at least one week.

6. POWER AMPLIFIER

Hybrid IC STK-3042-IIA is used for the voltage amplifier. Discrete transistors are used in the power amplifier stage. The power supply used a highly efficient circuit to support 45 W of amplification on two channels.

a) Voltage shift circuit



A block diagram of the voltage shift circuit is shown above. The voltage across the L and R speaker lines is rectified and compared with the low voltage (+21 or –21). When the switching level is reached, one of the comparators actuates the monostable vibrator to generate a pulse with a duration of 450 ms.
The level of the pulse signal is shifted, and this shifted signal drives the voltage shift IC so that high voltage is supplied to the power amplifier when the speaker output exceeds 15 W/8 ohms.

b) Built-in overheating detector

A 12DC posister is attached to the heat sink which it turns off the speaker relay to protect the transistors when the temperature of the heat sink exceeds 12DC.

The input stage of the power amplifier uses 2SD1302s (Q701 and Q702) which feature low V_{CE} saturation voltage so that the output signal is muted when the function switch is operated. (The gain is about 30 dB.)

7. SPEAKER

Only one set of speakers can be connected.

8. P.W. BOARDS

As can be seen from the circuit diagram the chassis of Model PM433 consists of the following units. Each unit mounted on a printed circuit board is described within the square enclosed by a bold dotted line on the circuit diagram.

1. **Main Amp . . . . . .mounted on P.W. Board P700**
2. **Tone Control Amp . . . mounted on P.W. Board PE00**
3. **Electric Volume . . . . . mounted on P.W. Board PG00**
4. **Function Switch . . . . . mounted on P.W. Board PY00**
5. **Speaker Terminal . . . . mounted on P.W. Board PW00**
6. **Headphone. . . . . mounted on P.W. Board PW50**
7. **Mic Jack . . . . . .mounted on P.W. Board PF50**
8. **Function Micon . . . . . .mounted on P.W. Board PS00**
9. **RCA Pink Jack . . . . . mounted on P.W. Board PV00**
10. **Tone Volume/ Vol Up Down Switch. . .mounted on P.W. Board PG50**
11. **Voltage Shift . . . . . .mounted on P.W. Board PL00**

9. TEST EQUIPMENT REQUIRED FOR SERVICING

This table lists the test equipment required for servicing the Model PM433 Stereo Pre Main Amplifier.

Item	Use
Distortion Analyzer	Distortion measurements
Audio Oscillator	Sinewave and squarewave signal source
AC VTVM	Voltage measurements (AC)
Oscilloscope	Waveform analysis and trouble shooting and ASO alignment
Circuit Tester	Trouble shooting
DC VTVM	Voltage measurements (DC)
AC Wattmeter	Monitors primary power to amplifier
Line Voltmeter	Monitors potential of primary power to amplifier
Variable Autotransformer (0 ~ 140V AC, 10A)	Adjust level of primery power to amplifier
Shorting Plug	Shorts amplifier input to eliminate noise pickup

10. ADJUSTING PROCEDURES

1. Volume indicator level adjustment (VR. IND. LEVEL ADJ.)

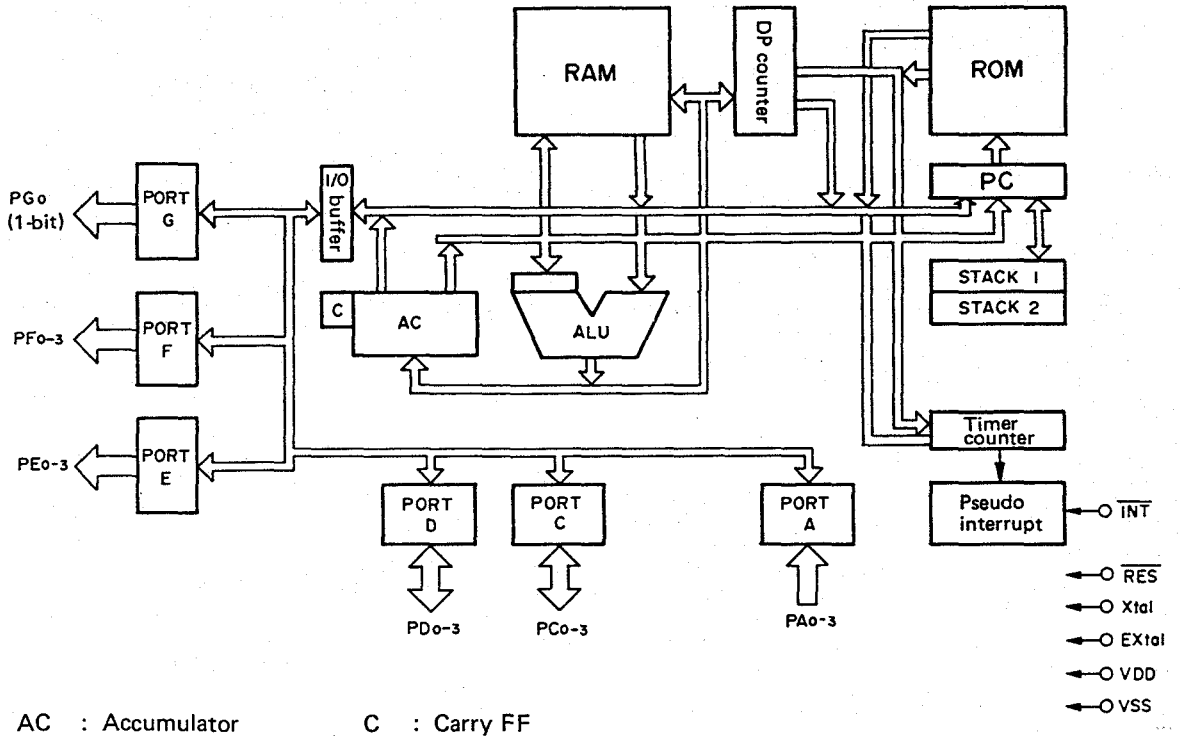
(1) Apply the input of 1 kHz 100 mV to "TUNER INPUT" of the set. The outpit of the speaker is to be of no load.
(2) Keep pressing the "UP" button of the "VOLUME UP/ DOWN SWITCH" until the speaker output maximizes and the rise in the level comes to a stop.
(3) Keep pressing the "DOWN" button of the "VOLUME UP/DOWN SWITCH" until the speaker output goes down by 2 steps (about –4 dB).
(4) Turn RG14 (5 kΩ) in such a way that the five points of the volume indicator (green LEDs) will light up.
(5) After turning the "POWER SWITCH" off, turn it on again, and confirm that two points of the LEDs will light in the initial state.
Also, confirm that five points of the LEDs will light at "VOLUME MAX."

2. Idling adjustment (IDLING ADJ.)

(1) Providing input to and receiving output from the set is to be effected in the "OPEN" state.
(2) For the left channel, connect the digital voltmeter to both TP–1 and R727 (A) and for the right channel, to both TP–2 and R728 (B). (Refer to the diagram of the printed circuit board.)
(3) After switching "POWER" on, turn R711 (L. ch) and R712 (R. ch), and adjust so that DC voltage will register 6.0 mV on the digital voltmeter. (Idling current, about 20 mA).

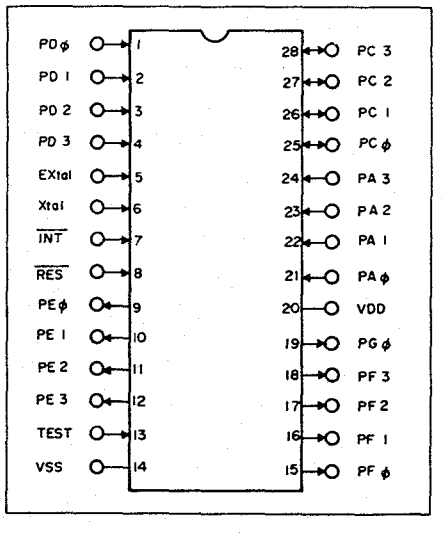
11. SINGLE-CHIP 4-BIT MICROCOMPUTER FOR LM6416E (QU03) N-CHANNEL E/D MOS LSI

- **System Block Diagram** (LM6416E (QU03))



AC : Accumulator
ALU : Logic operation unit
DP : Data pointer
C : Carry FF
PC : Program counter

- **Package and Terminal Name**



(Terminal Name)

Xtal, EXtal : Resonator for oscillator
$\overline{INT}$: Interrupt
$\overline{RES}$: Reset
$PA_{0\text{-}3}$: Input port $A_{0\text{-}3}$
$PC_{0\text{-}3}$: I/O port $C_{0\text{-}3}$
$PD_{0\text{-}3}$: I/O port $D_{0\text{-}3}$
$PE_{0\text{-}3}$: Output port $E_{0\text{-}3}$
$PF_{0\text{-}3}$: Output port $F_{0\text{-}3}$
PG_0 : Output port G_0
TEST : Test

• Terminal Function (LM6416E (QU03))

Terminal Name	I/O	Function
$\overline{INT}$	Input	Pseudo interrupt request input terminal.
$\overline{RES}$	Input	Reset input terminal.
PA_{3-0}	Input	Input ports A_3 to A_0 In input mode, 4-bit input and bit test are allowed.
PC_{3-0}	I/O	I/O ports C_3 to C_0 In input mode, 4-bit input and bit test are allowed. In output mode, 4-bit output, bit set/reset and immediate data output are allowed.
PD_{3-0}	I/O	I/O ports D_3 to D_0 In input mode, 4-bit input and bit test are allowed. In output mode, 4-bit output, bit set/reset and immediate data output are allowed.
PE_{3-0}	Output	Output ports E_3 to E_0 4-bit output and bit set/reset are allowed.
PF_{3-0}	Output	Output ports F_3 to F_0 4-bit output and bit set/reset are allowed.
PG_0	Output	Output port G_0 In output mode, 1-bit output and bit set/reset are allowed.
X'tal	I/O	External terminal of the resonance circuit for local clock signal oscillation. A ceramic resonator and CR are connected to the space between this terminal and Ex'tal terminal.
Ex'tal	Input	Terminal operated with clock signal externally supplied. A ceramic resonator and CR are connected to the space between the X'tal and this terminals when using the local clock signal oscillator.
V_{DD}	Input	Power terminal, usually connected to +5V.
V_{SS}		Connected to 0V of power supply.
TEST	Input	LSI test terminal, usually connected to V_{SS} (0V).

• Maximum Ratings (Ta = 25°C, V_{SS} = 0V)

Item	Symbol	Condition	Min.	Max.	Unit
Maximum supply voltage	V_{DD} max.		−0.3	+8	V
Input voltage	V_{IN}		−0.3	+12 (15)	V
Output voltage	V_{OUT}	Output transistor OFF	−0.3	+12 (15)	V
Mean output current	I_{OLA} (1)	Per terminal of port	0	20	mA
(Average at interval of 100 ms)	I_{OLA} (2)	Sum of C and D ports	0	100	mA
	I_{OLA} (3)	Sum of E, F and G ports	0	110	mA
Peak output current	I_{OLA} (1)	Per terminal of port	0	20	mA
	I_{OLA} (2)	Sum of C and D port	0	120	mA
	I_{OLA} (3)	Sum of E, F and G port	0	130	mA
Allowable power dissipation	P_d max.	−30°C to +70°C			mW
Ambient operating temperature	T_{opg}		−30	+70	°C
Ambient storage temperature	T_{stg}		−55	+125	°C

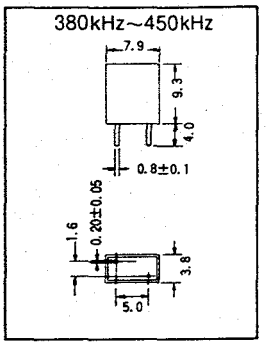
• Operating Condition (Ta = −30 ~ +70°C, V_{SS} = 0V)

Item		Symbol	Min.	Max.	Unit
Recommended operating supply voltage		V_{DD}	4.5	6.5	V
Port input	High-level input voltage	V_{IH} (1)	0.6 V_{DD}	10	V
	Low-level input voltage	V_{IL} (1)	V_{SS}	0.3 V_{DD}	V
$\overline{INT}$, $\overline{RES}$	High-level input voltage	V_{IH} (2)	0.7 V_{DD}	10	V
	Low-level input voltage	V_{IL} (2)	V_{SS}	0.3 V_{DD}	V
EX'tal	High-level input voltage	V_{IH} (3)	0.7 V_{DD}	V_{DD}	V
	Low-level input voltage	V_{IL} (3)	V_{SS}	0.6	V
	Clock signal period	tc (ϕ)	1.0	10.0	μs
	High-level clock pulse width	twϕH	0.3		μs
	Low-level clock pulse width	twϕL	0.5		μs
Oscillator circuit	Resistor installed outside ceramic oscillator	R1	900	1100	kΩ
	Capacitor installed outside ceramic oscillator	C1			pF
	Capacitor installed outside ceramic oscillator	C2			pF
	Resistor installed outside CR oscillator	R2			pF
	Capacitor installed outside CR oscillator	C3			kΩ
TEST	Low-level input voltage	V_{IL} (4)	V_{SS}	0.4	V

• Electrical Characteristics (Ta = −30 ~ +70°C, V_{DD} = 4.5 ~ 6.5V, V_{SS} = 0V)

Item		Symbol	Min.	Max.	Unit
Port A	High-level input current	I_{IH} (1)		10	μA
$\overline{INT}$, $\overline{RES}$	Low-level input current	I_{IL} (1)	−10		μA
EX'tal	High-level input current	I_{IH} (2)		10	μA
	Low-level input current	I_{IL} (2)	−10		μA
Port C, D (in output Off)	High-level input current	I_{IH} (3)		10	μA
	Low-level input current	I_{IL} (3)	−10		μA
Ports C to G	Low-level output current	I_{OL} (1)	10		mA
	Output off leak current	I_{OFF} (1)		10	μA
CR oscillation frequency		f_{OSC}	500	1000	kHz
Power dissipation		I_{DD}		20	mA
Input terminal capacitance		C_I		10	pF

• Ceramic Resonator



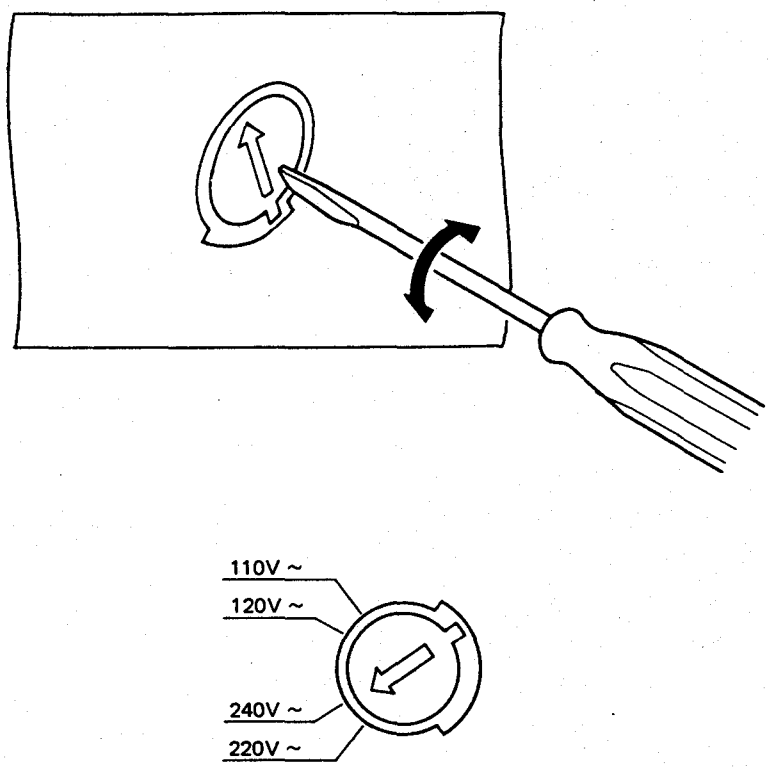
12. VOLTAGE CONVERSION

- **EUROPEAN MODEL ONLY**

To convert the unit to a different power source voltage, change the position as illustrated in the drawing below.

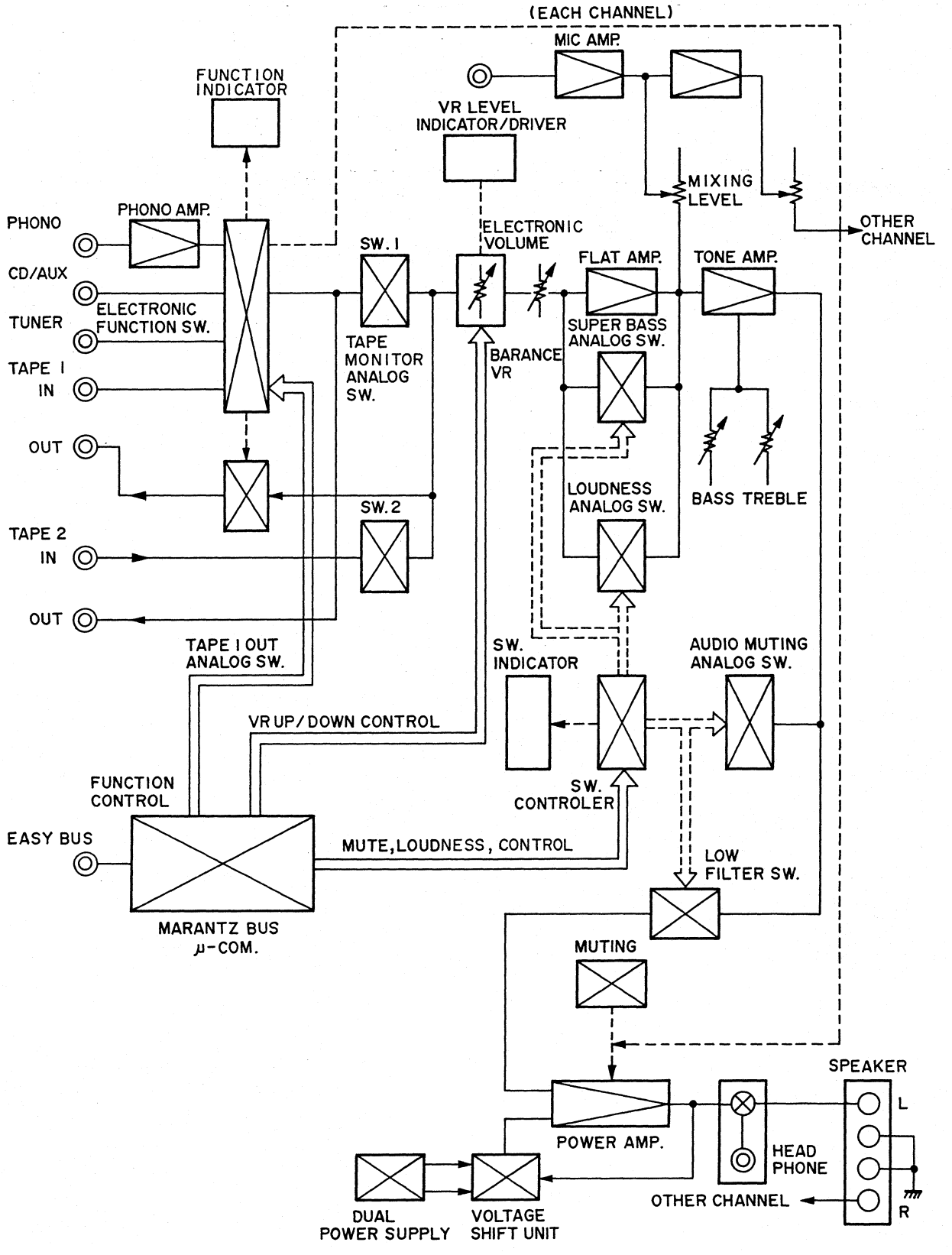
CAUTION
DISCONNECT POWER SUPPLY CORD FROM AC OUTLET BEFORE CONVERTING VOLTAGE.

Voltage Conversion Chart



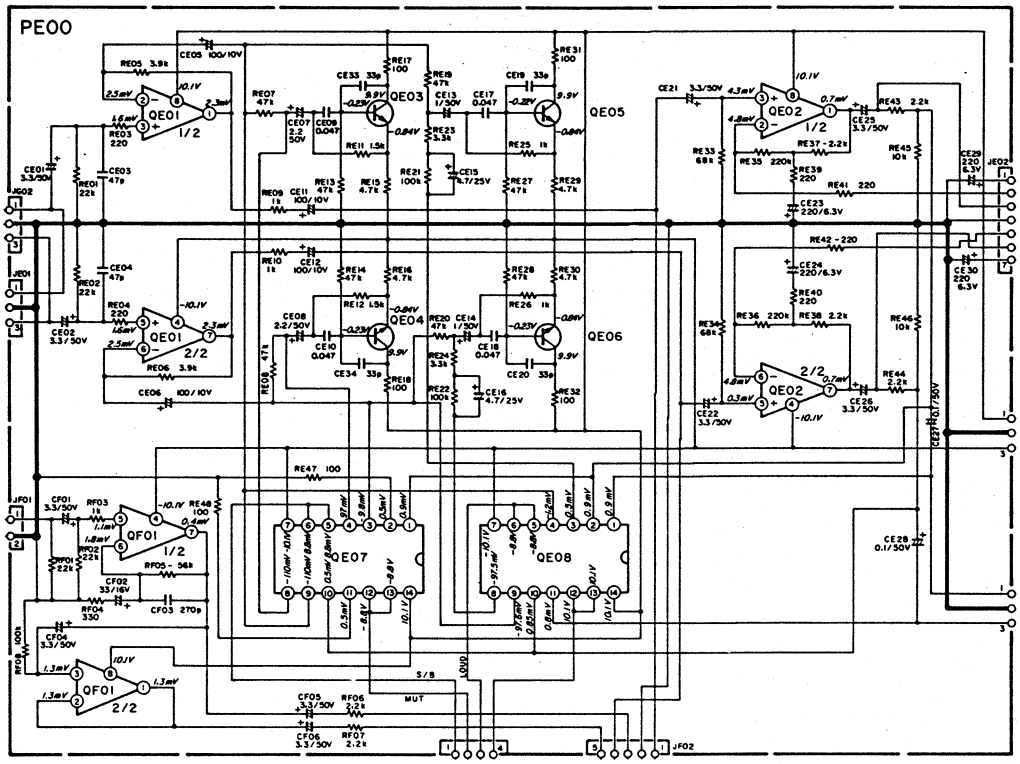
Note on safety: Symbol ⚠ Fire or electrical shock hazard. Only orignal parts should be used to replace any part marked with symbol ⚠ . Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.

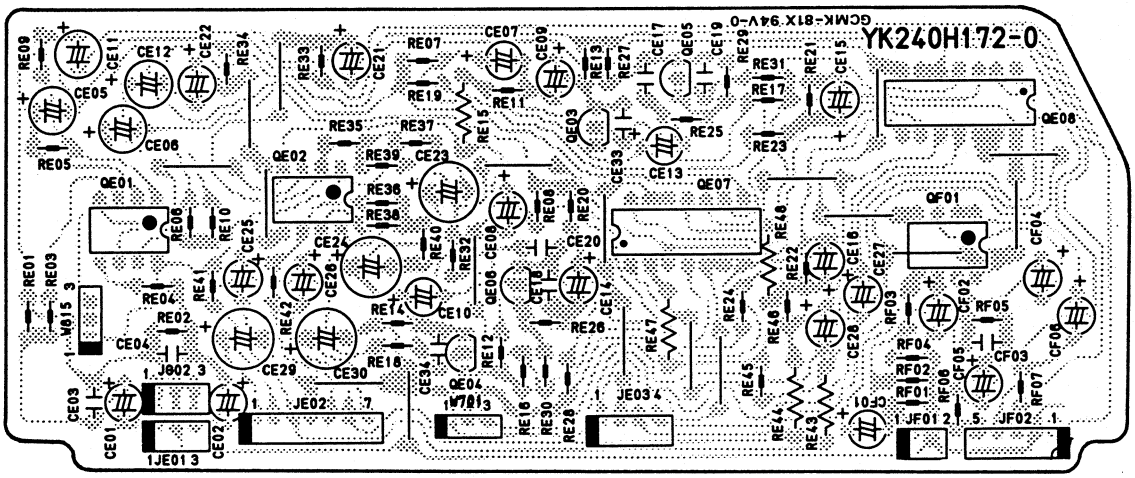
13. BLOCK DIAGRAM



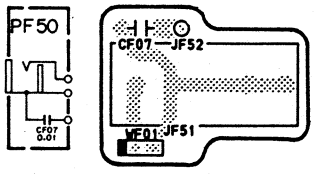
14. DIAGRAM AND COMPONENT LOCATIONS

14.1 Tone Control Amp. Assembly (PE00) Schematic Diagram and Component Locations

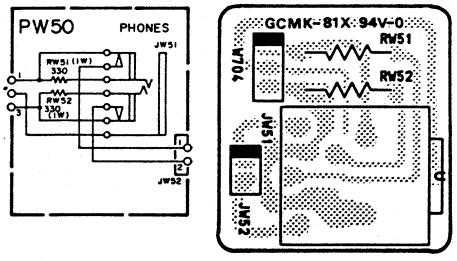




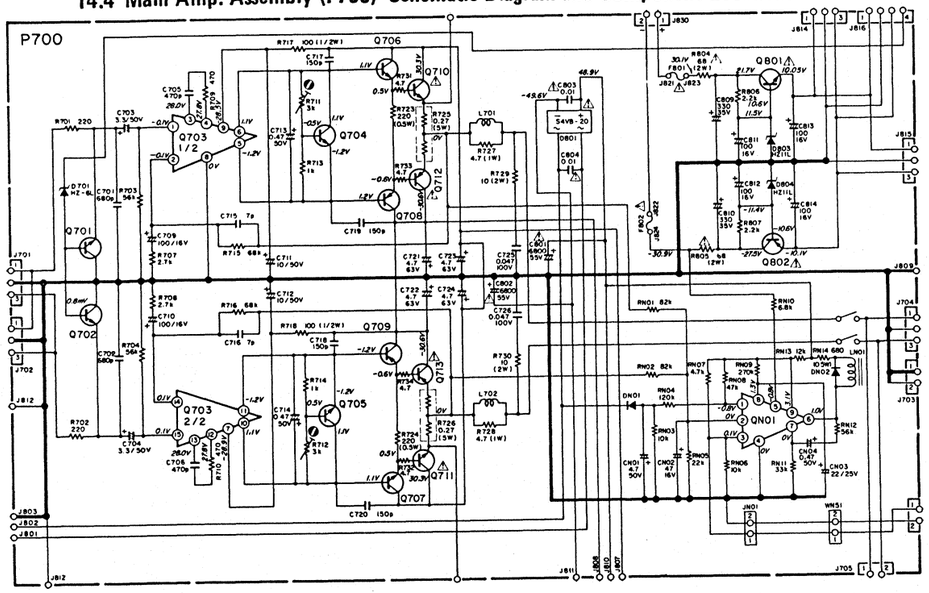
14.2 Mic Jack Assembly (PF50) Schematic Diagram and Component Locations

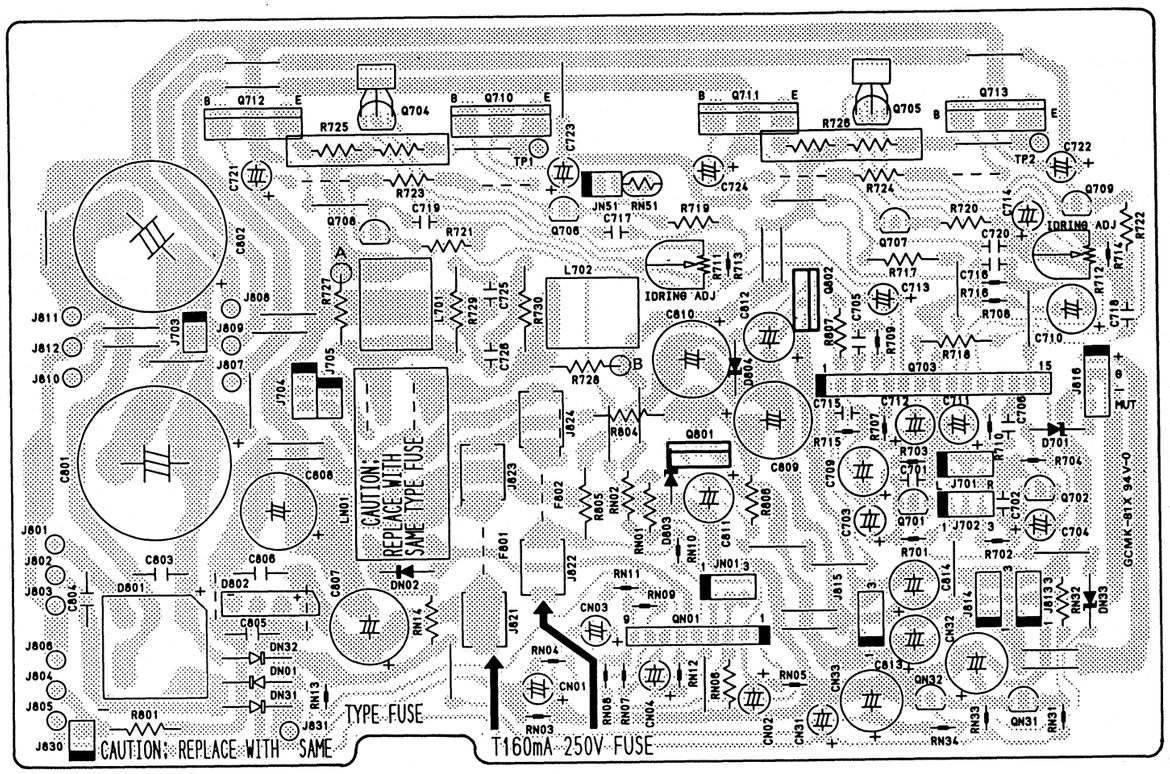


14.3 Headphone Assembly (PW50) Schematic Diagram and Component Locations

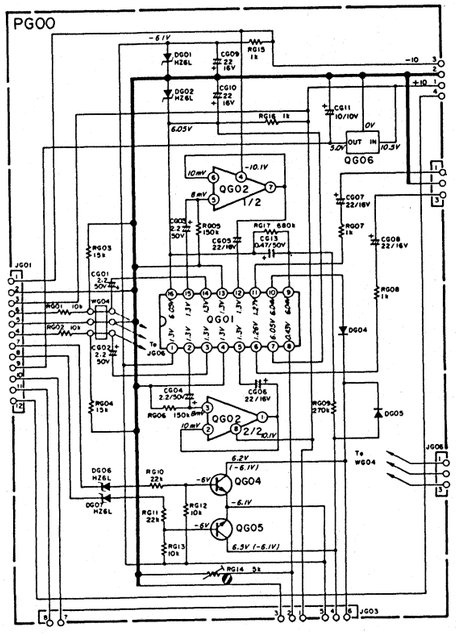


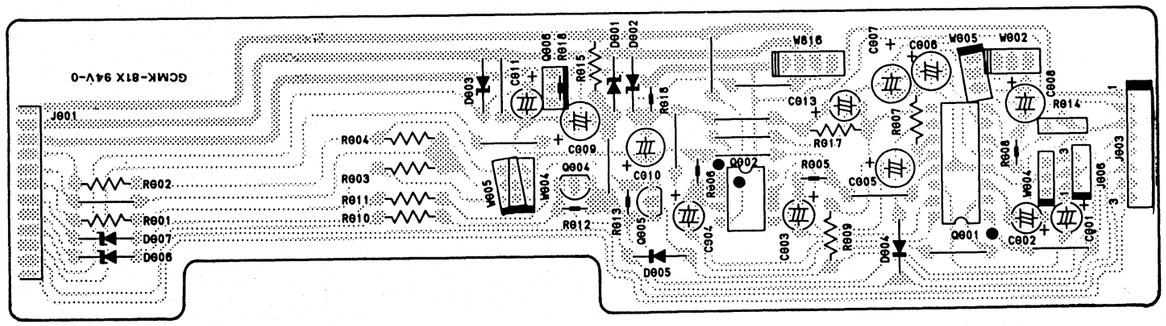
14.4 Main Amp. Assembly (P700) Schematic Diagram and Component Locations



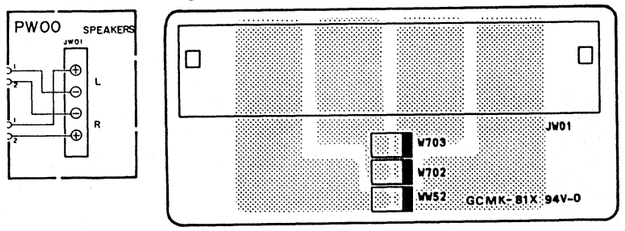


14.5 Electric Volume Assembly (PG00) Schematic Diagram and Component Locations

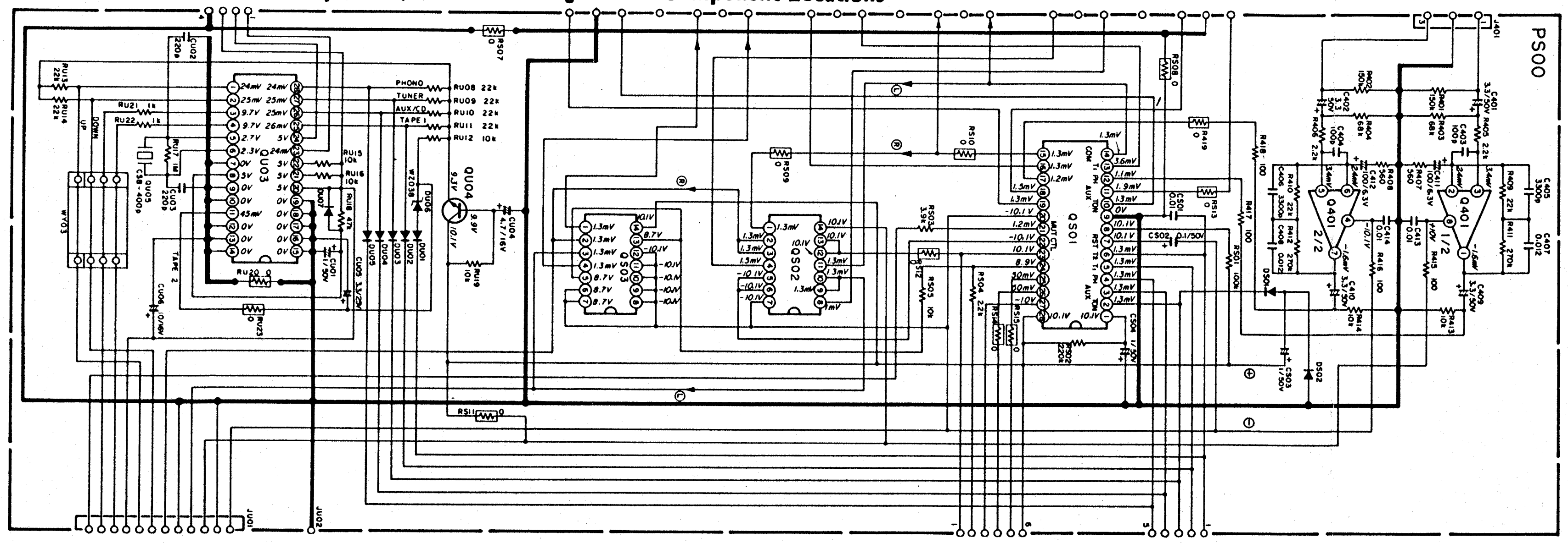


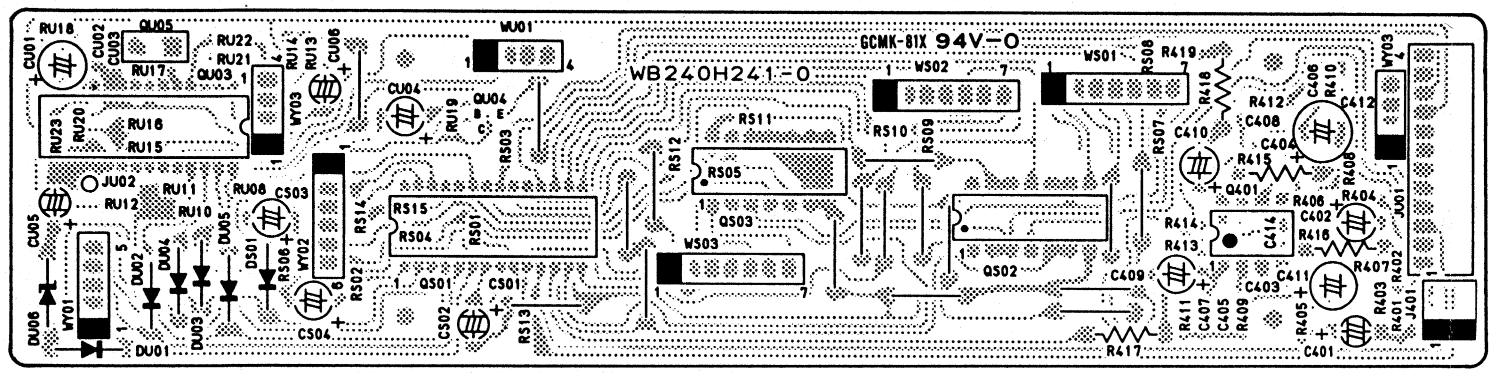


14.6 Speaker Terminal Assembly (PW00) Schematic Diagram and Component Locations

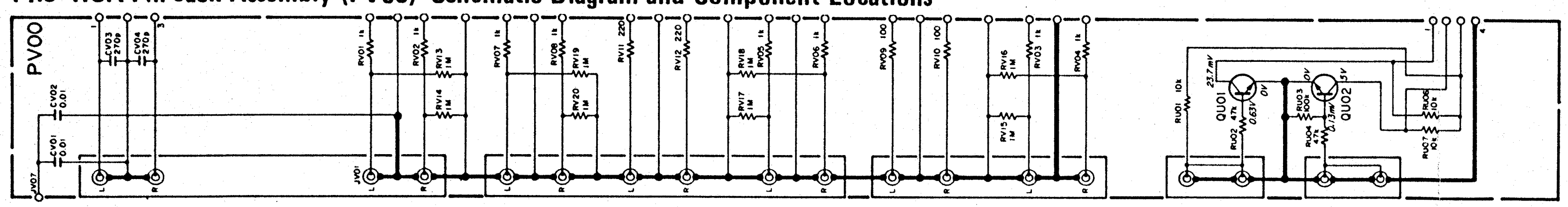


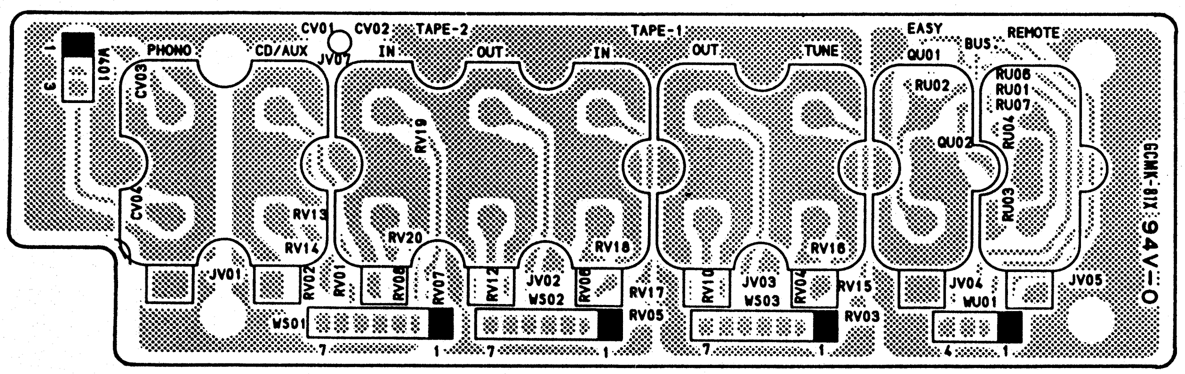
14.7 Function/Micon Assembly (PS00) Schematic Diagram and Component Locations



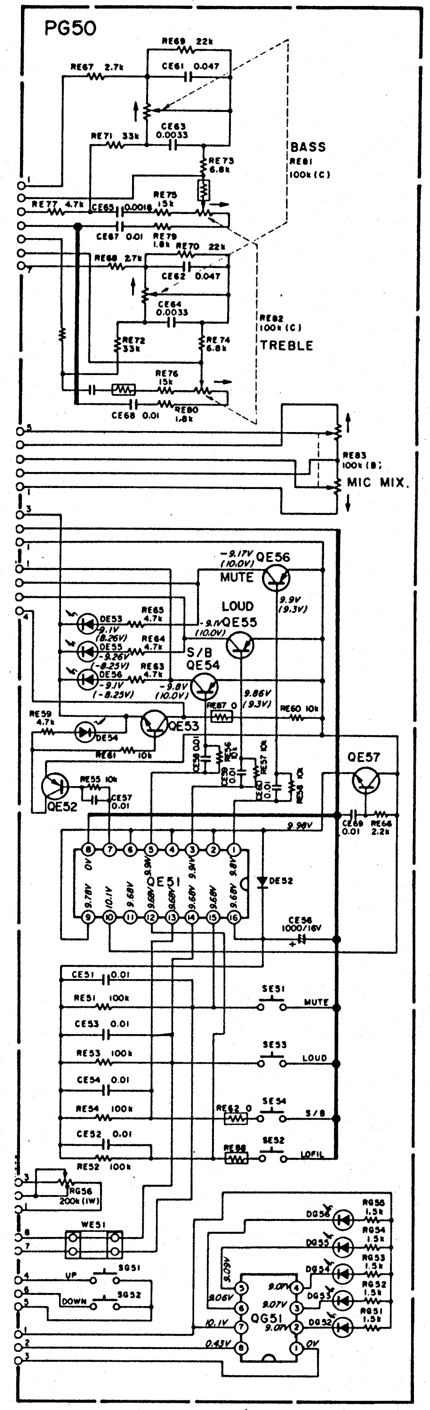


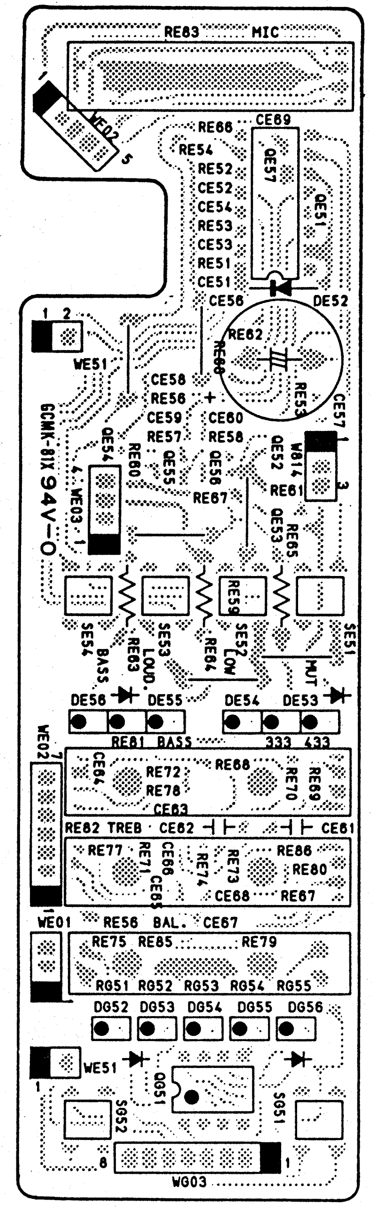
14.8 RCA Pin Jack Assembly (PV00) Schematic Diagram and Component Locations



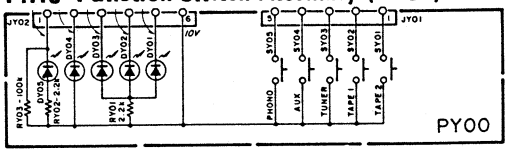


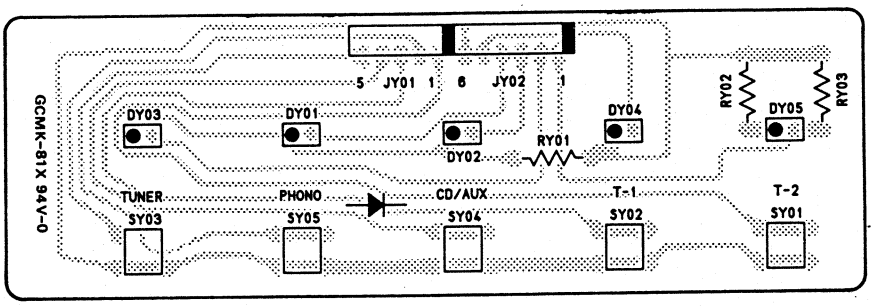
14.9 Tone, Main Volume LED Assembly (PG50) Schematic Diagram and Component Locations



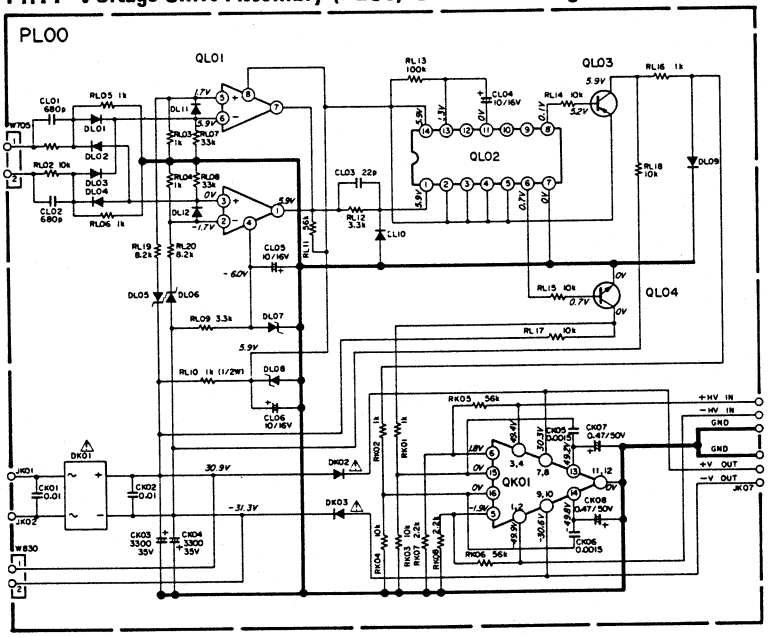


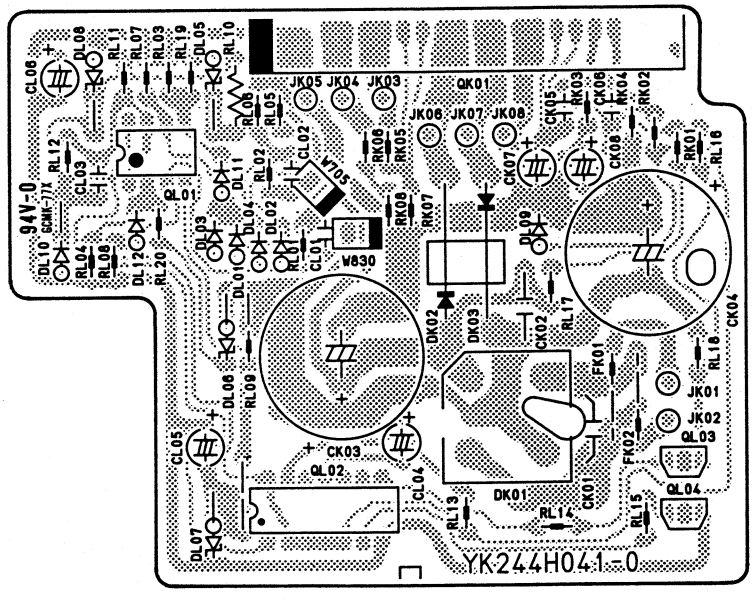
14.10 Function Switch Assembly (PY00) Schematic Diagram and Component Locations





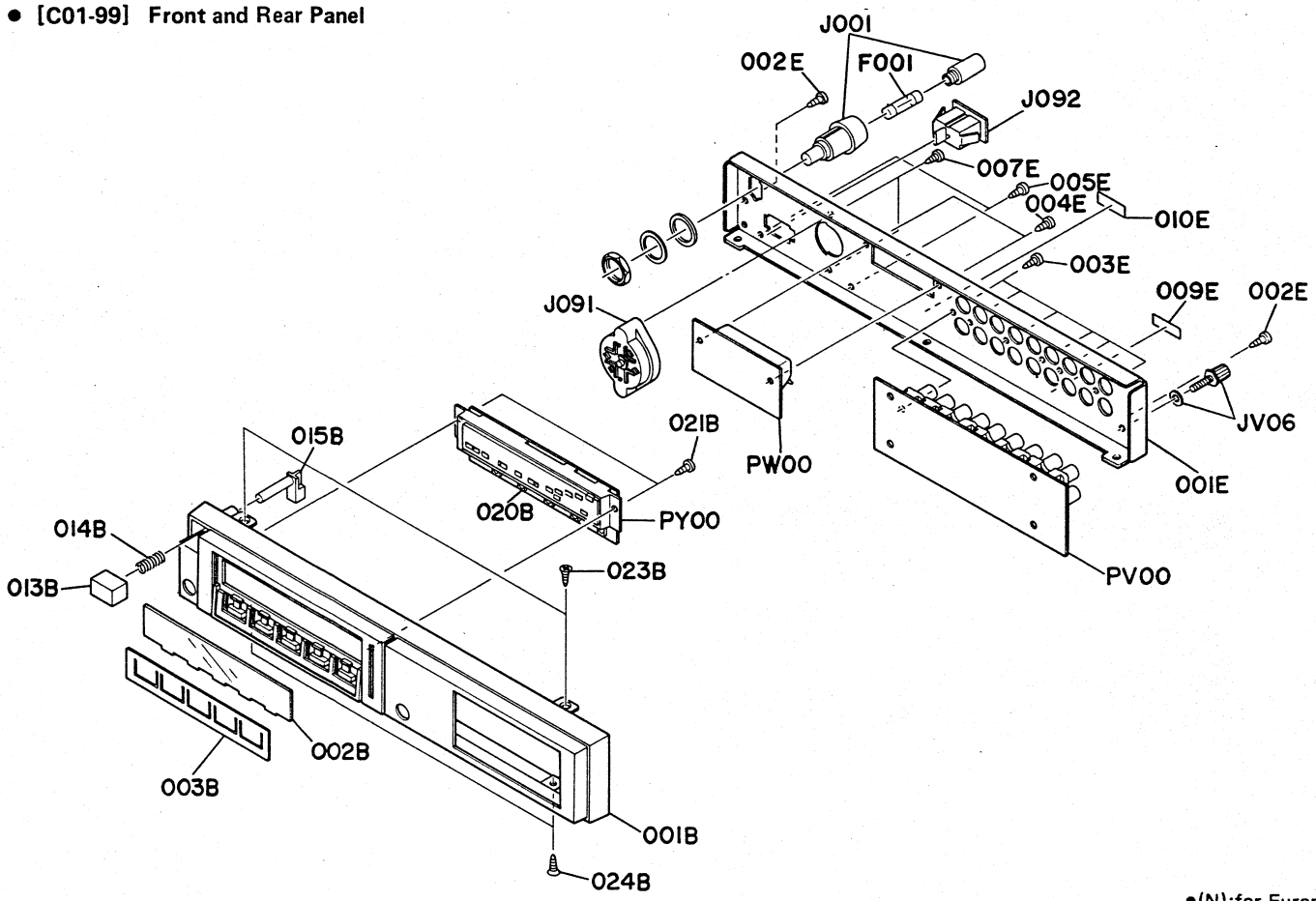
14.11 Voltage Shift Assembly (PL00) Schematic Diagram and Component Locations





15. EXPLODED VIEW AND PARTS LIST

- **[C01-99] Front and Rear Panel**

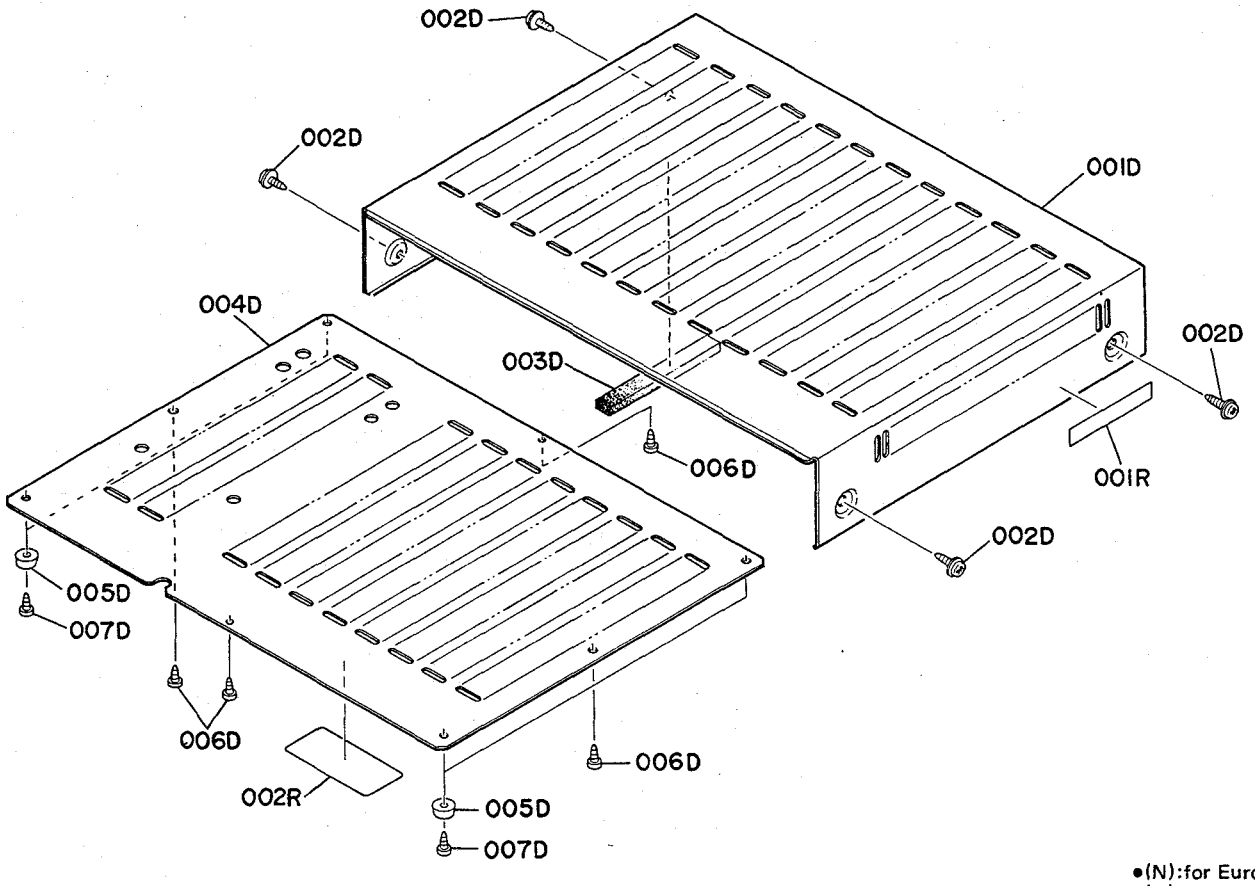


●(N):for Europe
●(A):for Australia

REF. DESIG.	Q'TY N	Q'TY A	PART NO.	DESCRIPTION
A	1	1	244H063400	Front Panel Assembly
001B	1	1	244H063010	Escutcheon, Front Panel
002B	1	1	240H158010	Window
003B	1	1	240H127010	Control Board
013B	1	1	139T154350	Knob, Power Switch
014B	1	1	139T115020	Spring
015B	1	1	012H121010	Link
020B	1	1	240H118010	Spacer
021B	2	2	5128260680	B.H. Tapped Screw B2.6 x 6
023B	2	2	5150306B9	F.H. Tapped Screw F3 x 6
024B	2	2	5150306B0	F.H. Tapped Screw F3 x 6

REF. DESIG.	Q'TY N	Q'TY A	PART NO.	DESCRIPTION
001E	1	1	244H160220	Bracket, Rear Panel
002E	2	2	5128030680	B.H. Tapped Screw B3 x 6
003E	6	6	5128030880	B.H. Tapped Screw B3 x 8
004E	2	2	5128030880	B.H. Tapped Screw B3 x 8
005E	2	2	5128030680	B.H. Tapped Screw B3 x 6
007E	2	2	5128030880	B.H. Tapped Screw B3 x 8
009E	1	1	2112265010	Indicator
010E	1	1	4581861010	Label, Made in Japan
⚠ F001	1	1	FS10160800	Fuse T1.6A 250V
⚠ J001	1	1	YJ08000290	Jack, Fuse Holder
⚠ J091	1	1	BY05080050	Voltage Selector
⚠ J092	1	1	YP04000580	Plug, AC Inlet
JV06	1	1	YL03010250	Terminal (GND)

- **[C02-99] Lid (Top/Botton)**

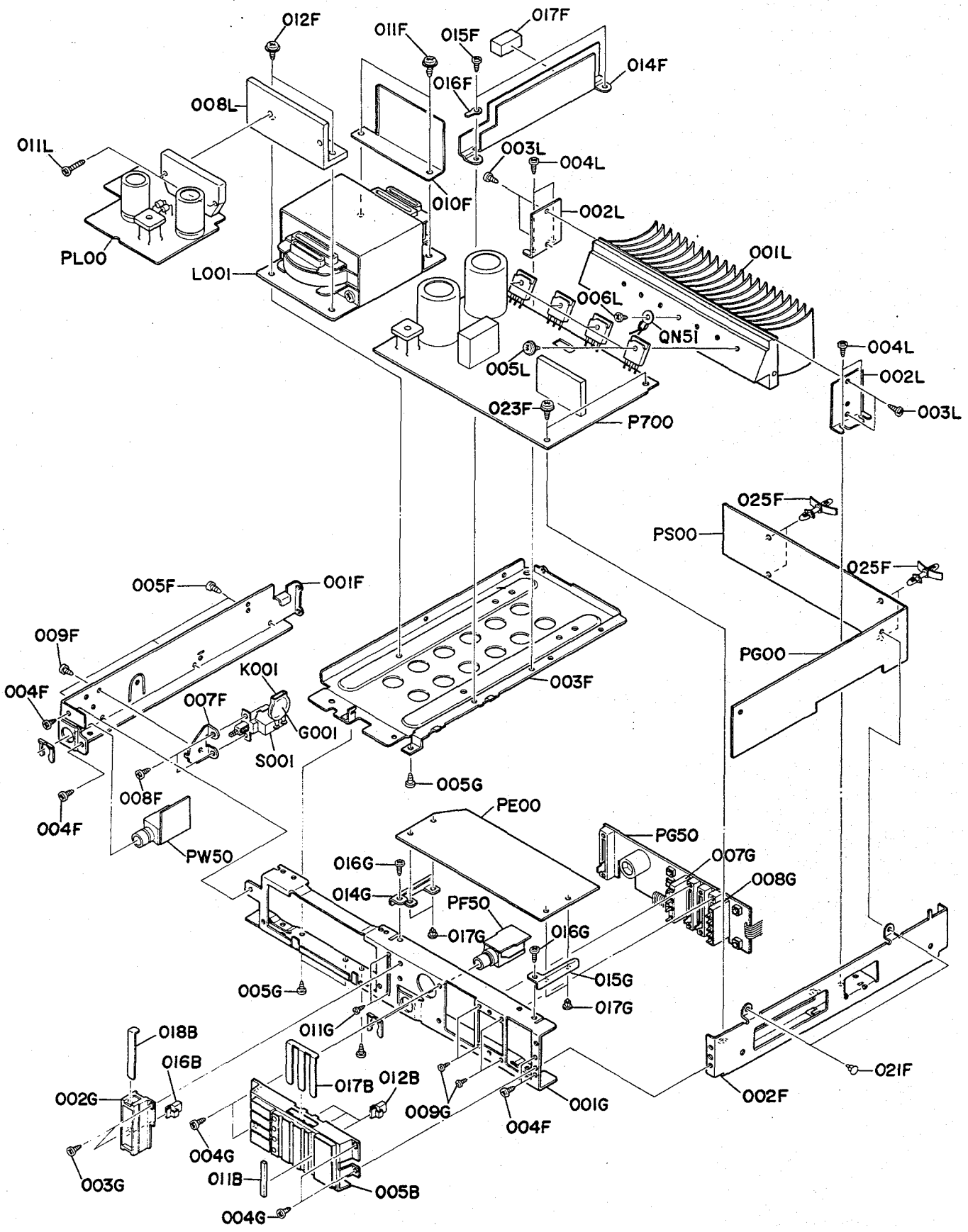


●(N):for Europe
●(A):for Australia

REF. DESIG.	Q'TY N	Q'TY A	PART NO.	DESCRIPTION
001D	1	1	240H257010	Lid, Top Cover
002D	4	4	51260306U0	B.T. Screw B3 x 6
003D	1	1	240H056010	Buffer
004D	1	1	240H257020	Lid, Bottom Cover
005D	4	4	240H057010	Leg
006D	4	4	51280306B0	B.H. Tapped Screw B3 x 6
007D	4	4	51280306B0	B.H. Tapped Screw B3 x 6

REF. DESIG.	Q'TY N	Q'TY A	PART NO.	DESCRIPTION
001R	1	1	2911861140	Label
002R	1	1	2911861110	Label

- [P01-99] Chassis and General Parts

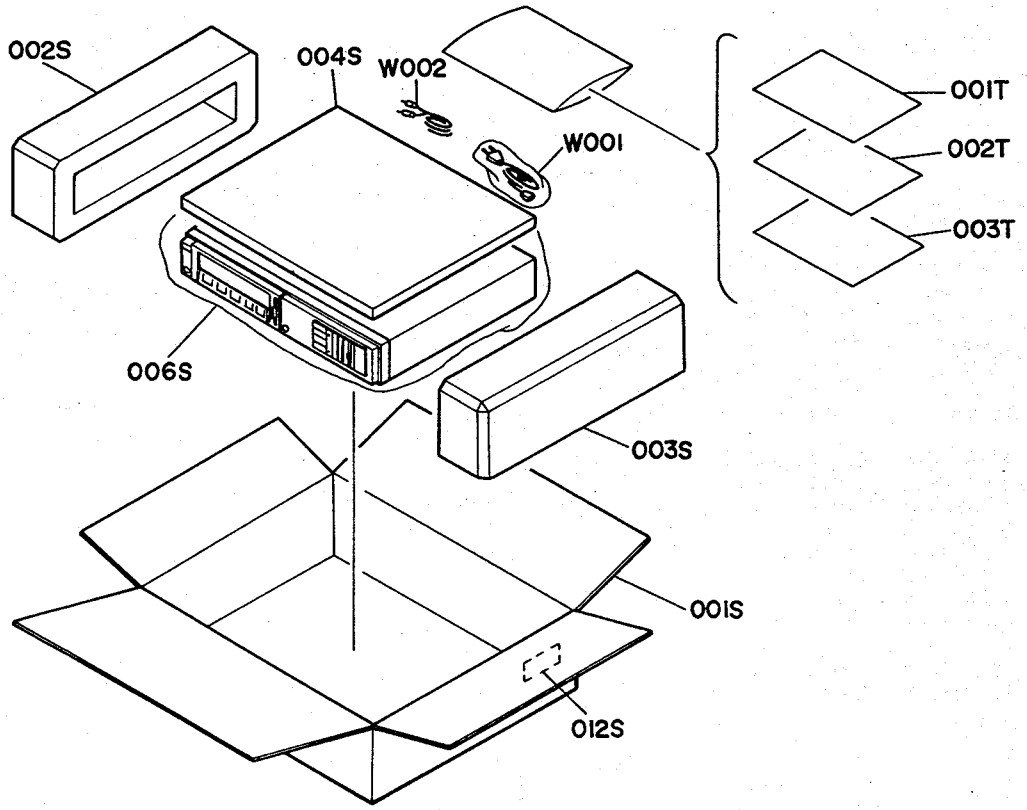


●(N):for Europe
●(A):for Australia

REF. DESIG.	Q'TY N	Q'TY A	PART NO.	DESCRIPTION
005B	1	1	244H259500	Bushing
011B	1	1	240H158020	Window, Volume
012B	3	3	240H154050	Knob
016B	1	1	012H154160	Knob, Mic
017B	1	1	012H303020	Mask
018B	1	1	240H303020	Mask, Mic
001F	1	1	240H126010	Stay, Left
002F	1	1	240H126020	Stay, Right
003F	1	1	240H004010	Table, Transformer
004F	4	4	51280306B0	B.H. Tapped Screw B3 x 6
005F	3	3	5128O306B0	B.H. Tapped Screw B3 x 6
007F	1	1	240H160040	Bracket, Power Switch
008F	2	2	51100306A9	B.H.M. Screw B3 x 6
009F	1	1	51280306B0	B.H. Tapped Screw B3 x 6
010F	1	1	244H120010	Insulator
011F	2	2	51280408B0	B.H. Tapped Screw B4 x 8
012F	2	2	51280412B0	B.H. Tapped Screw B4 x 12
014F	1	1	240H109010	Shield
015F	2	2	51280306B0	B.H. Tapped Screw B3 x 6
016F	1	1	62030049W0	Lug
017F	1	1	2114056010	Buffer
021F	2	2	2276005050	Clamper
023F	2	2	51260306U0	B.T. Screw B3 x 6
025F	4	4	240H101010	Support
001G	1	1	240H160010	Bracket, Chassis
002G	1	1	240H259020	Bushig, Mic
003G	2	2	51282606B0	B.H. Tapped Screw B2.6 x 6
004G	4	4	51282606B0	B.H. Tapped Screw B2.7 x 6
005G	3	3	51280306B0	B.H. Tapped Screw B3 x 6
007G	1	1	240H118020	Spacer, Mode
008G	1	1	240H118030	Spacer, Volume
009G	4	4	51100203A0	B.H.M. Screw B2 x 3
011G	2	2	51100203A0	B.H.M. Screw B2 x 3
014G	1	1	240H160020	Bracket
015G	1	1	240H160030	Bracket
016G	2	2	51500306B0	F.H. Taptite Screw F3 x 6
017G	4	4	2276005050	Clamper

REF. DESIG.	Q'TY N	Q'TY A	PART NO.	DESCRIPTION
001L	1	1	240H267010	Heatsink
002L	2	2	2133160030	Bracket
003L	4	4	51280306B0	B.H. Tapped Screw B3 x 6
004L	4	4	51280306B0	B.H. Tapped Screw B3 x 6
005L	4	4	51260310B0	B.T. Screw B3 x 10
006L	1	1	51260308B0	B.T. Screw B3 x 8
008L	1	1	244H267010	Heatsink
011L	2	2	51280314B0	B.H. Tapped Screw B3 x 14
K001	1	1	403H120010	Insulator
⚠G001	1	1	DK18103840	Ceramic Cap. 0.01μF 250V
⚠L001	1	1	TS17803010	Power Transformer
QN51	1	1	HP00009230	Varistor PTH487A018B
⚠S001	1	1	SP01010650	Push Switch, Power

• [H01-99] Packing Materials



•(N):for Europe
•(A):for Australia

REF. DESIG.	Q'TY N	Q'TY A	PART NO.	DESCRIPTION
001S	1	1	244H801020	Packing Case
002S	1	1	240H809110	Cushion, (L)
003S	1	1	240H809020	Cushion, (R)
004S	1	1	240H809030	Cushion
006S	1	1	9090808030	Polyethylene Bag
012S	4		9526019060	Serial No. Card
012S		4	9526019030	Serial No. Card
001T	1	1	244H851310	Instructions
002T	1	1	244H851320	Instructions, Spec
003T	1		244H856010	Circuit Diagram
003T		1	9631000090	Guarantee Card

REF. DESIG.	Q'TY N	Q'TY A	PART NO.	DESCRIPTION
⚠ W001	1		ZC01805010	A.C. Power Cord
⚠ W001		1	ZC02006020	A.C. Power Cord
W002	1	1	ZD00400090	Connective Cord

16. ELECTRICAL PARTS LIST

●(N):for Europe
●(A):for Australia

REF DESIG.	Q'TY N	Q'TY A	PART NO	DESCRIPTION
				P700-MAIN AMP CIRCUIT BOARD
P700	1	1	YK240H1710	P.W. Board, Main Amp
	1	1	ZZ240H8710	P.W. Board Assembly
				P700-CAPACITORS
CN01	1	1	EA47505030	Elect 4.7μF 50V
CN02	1	1	EA47601630	Elect 47μF 16V
CN03	1	1	EA22602530	Elect 22μF 25V
CN04	1	1	EA47405030	Elect 0.47μF 50V
C701	1	1	DK16681300	Ceramic 680pF ±10%
C702	1	1	DK16681300	Ceramic 680pF ±10%
C703	1	1	EA33505030	Elect 3.3μF 50V
C704	1	1	EA33505030	Elect 3.3μF 50V
C705	1	1	DD15471370	Ceramic 470pF ±5%
C706	1	1	DD15471370	Ceramic 470pF ±5%
C709	1	1	EA10701630	Elect 100μF 16V
C710	1	1	EA10701630	Elect 100μF 16V
C711	1	1	EA10605030	Elect 10μF 50V
C712	1	1	EA10605030	Elect 10μF 50V
C713	1	1	EA47405030	Elect 0.47μF 50V
C714	1	1	EA47405030	Elect 0.47μF 50V
C715	1	1	DD11070370	Ceramic 7pF ±0.5pF
C716	1	1	DD11070370	Ceramic 7pF ±0.5pF
C717	1	1	DK16151550	Ceramic 150pF ±10%
C718	1	1	DK16151550	Ceramic 150pF ±10%
C719	1	1	DK16151550	Ceramic 150pF ±10%
C720	1	1	DK16151550	Ceramic 150pF ±10%
C721	1	1	EA47506330	Elect 4.7μF 63V
C722	1	1	EA47506330	Elect 4.7μF 63V
C723	1	1	EA47506330	Elect 4.7μF 63V
C724	1	1	EA47506330	Elect 4.7μF 63V
C725	1	1	DF16473540	Film 0.047μF ±10%
C726	1	1	DF16473540	Film 0.047μF ±10%
⚠C801	1	1	EB68805570	Elect 6800μF 55V
⚠C802	1	1	EB68805570	Elect 6800μF 55V
⚠C803	1	1	DK18103560	Ceramic 0.01μF
⚠C804	1	1	DK18103560	Ceramic 0.01μF
⚠C807	1	1	EA47703530	Elect 470μF 35V
⚠C808	1	1	EA47703530	Elect 470μF 35V
C811	1	1	EA10701630	Elect 100μF 16V
C812	1	1	EA10701630	Elect 100μF 16V
C813	1	1	EA10701630	Elect 100μF 16V
C814	1	1	EA10701630	Elect 100μF 16V

REF DESIG.	Q'TY N	Q'TY A	PART NO	DESCRIPTION
				P700-RESISTORS (All Resistors are ±5% and ¼W)
RN01	1	1	GD05823140	82kΩ
RN02	1	1	GD05823140	82kΩ
RN03	1	1	GD05103140	10kΩ
RN04	1	1	GD05124140	120kΩ
RN05	1	1	GD05223140	22kΩ
RN06	1	1	GD05103140	10kΩ
RN07	1	1	GD05472140	4.7kΩ
RN08	1	1	GD05473140	47kΩ
RN09	1	1	GD05274140	270kΩ
RN10	1	1	GD05682140	6.8kΩ
RN11	1	1	GD05333140	33kΩ
RN12	1	1	GD05563140	56kΩ
RN13	1	1	GD05123140	12kΩ
RN14	1	1	NK05681120	680Ω ½W
R701	1	1	GD05221140	220Ω
R702	1	1	GD05221140	220Ω
R703	1	1	GD05563140	56kΩ
R704	1	1	GD05563140	56kΩ
R707	1	1	GD05272140	2.7kΩ
R708	1	1	GD05272140	2.7kΩ
R709	1	1	GD05471140	470Ω
R710	1	1	GD05471140	470Ω
R711	1	1	RA03020800	3kΩ, Trimming
R712	1	1	RA03020800	3kΩ, Trimming
R713	1	1	GD05102140	1kΩ
R714	1	1	GD05102140	1kΩ
R715	1	1	GD05683140	68kΩ
R716	1	1	GD05683140	68kΩ
R717	1	1	NK05101120	100Ω ½W
R718	1	1	NK05101120	100Ω ½W
R723	1	1	NK05221120	220Ω ½W
R724	1	1	NK05221120	220Ω ½W
R725	1	1	BW10000030	0.27Ω x 2 5W, Compo.
R726	1	1	BW10000030	0.27Ω x 2 5W, Compo.
R727	1	1	NK05047010	4.7Ω 1W
R728	1	1	NK05047010	4.7Ω 1W
R729	1	1	NK05100020	10Ω 2W
R730	1	1	NK05100020	10Ω 2W
R731	1	1	GG05047140	4.7Ω
R732	1	1	GG05047140	4.7Ω
R733	1	1	GG05047140	4.7Ω
R734	1	1	GG05047140	4.7Ω
⚠R804	1	1	NK05680020	68Ω 2W
⚠R805	1	1	NK05680020	68Ω 2W
R806	1	1	GD05222140	2.2kΩ
R807	1	1	GD05222140	2.2kΩ

•(N):for Europe
•(A):for Australia

REF DESIG.	Q'TY N	Q'TY A	PART NO	DESCRIPTION	
				P700-SEMICONDUCTORS	
DN01	1	1	HD20015030	Diode	DS135D
DN02	1	1	HD20015030	Diode	DS135D
D701	1	1	HD30023010	Zener	HZ6C1L
⚠D801	1	1	HD20008290	Diode	S4VB20
D803	1	1	HD30038010	Zener	HZ11C1L
D804	1	1	HD30038010	Zener	HZ11C1L
QN01	1	1	HC10042050	IC	TA7317P
Q701	1	1	HT413022B0	Transistor	2SD1302(S or T)
Q702	1	1	HT413022B0	Transistor	2SD1302(S or T)
Q703	1	1	HC10111030	IC	STK30422A
Q704	1	1	HT309452B0	Transistor	2SC945(P or Q)
Q705	1	1	HT309452B0	Transistor	2SC945(P or Q)
Q706	1	1	HT406672F0	Transistor	2SD667(C or D)
Q707	1	1	HT406672F0	Transistor	2SD667(C or D)
Q708	1	1	HT206472F0	Transistor	2SB647(C or D)
Q709	1	1	HT206472F0	Transistor	2SB647(C or D)
⚠Q710	1	1	HT325782B0	Transistor	2SC2578(O or Y)
⚠Q711	1	1	HT325782B0	Transistor	2SC2578(O or Y)
⚠Q712	1	1	HT111032B0	Transistor	2SA1103(O or Y)
⚠Q713	1	1	HT111032B0	Transistor	2SA1103(O or Y)
⚠Q801	1	1	HT412652A0	Transistor	2SD1265(O or P)
⚠Q802	1	1	HT205072P0	Transistor	2SB507(D or E)
				P700-MISCELLANEOUS	
F801	1	1	FS10016800	Fuse	T160mA
F802	1	1	FS10016800	Fuse	T160mA
J701	1	1	YJ07000860	Jack, (3P)	
J702	1	1	YJ07000860	Jack, (3P)	
J703	1	1	YJ07000850	Jack, (2P)	
J704	1	1	YJ07000860	Jack, (3P)	
J705	1	1	YJ07000850	Jack, (2P)	
J814	1	1	YJ07000860	Jack, (3P)	
J815	1	1	YJ07000860	Jack, (3P)	
J816	1	1	YJ07000870	Jack, (4P)	
J821 ≀ J824	4	4	YJ08000270	Jack, Fuse Clip	
J830	1	1	YJ07000850	Jack, (2P)	
LN01	1	1	LY20240190	Relay, AP24D2	
L701	1	1	LL23905120	Coil, 1mH	
L702	1	1	LL23905120	Coil, 1mH	
W701	1	1	YU03140260	Jumper Lead, (3P)	
W703	1	1	YU02240240	Jumper Lead, (2P)	
W704	1	1	YU03240240	Jumper Lead, (3P)	
W705	1	1	YU02180260	Jumper Lead, (2P)	
W814	1	1	YU03100260	Jumper Lead, (3P)	
W815	1	1	YU03080260	Jumper Lead, (3P)	
W816	1	1	YU04060260	Jumper Lead, (4P)	
W830	1	1	YU02180240	Jumper Lead, (2P)	
WN51	1	1	YU02120260	Jumper Lead, (2P)	

REF. DESIG.	Q'TY N	Q'TY A	PART NO.	DESCRIPTION		
				PE00-TONE CONTROL AMP CIRCUIT BOARD		
PE00	1	1	YK240H1720	P.W. Board, Tone Control Amp		
	1	1	ZZ240H8720	P.W. Board Assembly		
				PE00-CAPACITORS		
CE01	1	1	EJ33505010	Elect	3.3μF	50V
CE02	1	1	EJ33505010	Elect	3.3μF	50V
CE03	1	1	DD15470370	Ceramic	47pF ±5%	
CE04	1	1	DD15470370	Ceramic	47pF ±5%	
CE05	1	1	EA10701030	Elect	100μF	10V
CE06	1	1	EA10701030	Elect	100μF	10V
CE07	1	1	EJ22505010	Elect	2.2μF	50V
CE08	1	1	EJ22505010	Elect	2.2μF	50V
CE09	1	1	DF15473300	Film	0.047μF ±5%	
CE10	1	1	DF15473300	Film	0.047μF ±5%	
CE11	1	1	EA10701030	Elect	100μF	10V
CE12	1	1	EA10701030	Elect	100μF	10V
CE13	1	1	EJ10505010	Elect	1μF	50V
CE14	1	1	EJ10505010	Elect	1μF	50V
CE15	1	1	EJ47502510	Elect	4.7μF	25V
CE16	1	1	EJ47502510	Elect	4.7μF	25V
CE17	1	1	DF15473300	Film	0.047μF ±5%	
CE18	1	1	DF15473300	Film	0.047μF ±5%	
CE19	1	1	DD15330370	Ceramic	33pF ±5%	
CE20	1	1	DD15330370	Ceramic	33pF ±5%	
CE21	1	1	EA33505030	Elect	3.3μF	50V
CE22	1	1	EA33505030	Elect	3.3μF	50V
CE23	1	1	EA22700630	Elect	220μF	6.3V
CE24	1	1	EA22700630	Elect	220μF	6.3V
CE25	1	1	EA33505030	Elect	3.3μF	50V
CE26	1	1	EA33505030	Elect	3.3μF	50V
CE27	1	1	EJ10405010	Elect	0.1μF	50V
CE28	1	1	EJ10405010	Elect	0.1μF	50V
CE29	1	1	EA22700630	Elect	220μF	6.3V
CE30	1	1	EA22700630	Elect	220μF	6.3V
CE33	1	1	DD15330370	Ceramic	33pF ±5%	
CE34	1	1	DD15330370	Ceramic	33pF ±5%	
CF01	1	1	EA33505030	Elect	3.3μF	50V
CF02	1	1	EA33601630	Elect	33μF	16V
CF03	1	1	DD15271370	Ceramic	270pF ±5%	
CF04	1	1	EA33505030	Elect	3.3μF	50V
CF05	1	1	EA33505030	Elect	3.3μF	50V
CF06	1	1	EA33505030	Elect	3.3μF	50V
				PE00-RESISTORS (All Resistors are ±5% and ¼W)		
RE01	1	1	GD05223140	22kΩ		
RE02	1	1	GD05223140	22kΩ		
RE03	1	1	GD05221140	220Ω		
RE04	1	1	GD05221140	220Ω		
RE05	1	1	GD05392140	3.9kΩ		
RE06	1	1	GD05392140	3.9kΩ		
RE07	1	1	GD05473140	47kΩ		
RE08	1	1	GD05473140	47kΩ		
RE09	1	1	GD05102140	1kΩ		
RE10	1	1	GD05102140	1kΩ		

•(N):for Europe
•(A):for Australia

REF. DESIG.	Q'TY N	Q'TY A	PART NO.	DESCRIPTION
RE11	1	1	GD05152140	1.5kΩ
RE12	1	1	GD05152140	1.5kΩ
RE13	1	1	GD05473140	47kΩ
RE14	1	1	GD05473140	47kΩ
RE15	1	1	GD05472140	4.7kΩ
RE16	1	1	GD05472140	4.7kΩ
RE17	1	1	GD05101140	100Ω
RE18	1	1	GD05101140	100Ω
RE19	1	1	GD05473140	47kΩ
RE20	1	1	GD05473140	47kΩ
RE21	1	1	GD05104140	100kΩ
RE22	1	1	GD05104140	100kΩ
RE23	1	1	GD05332140	3.3kΩ
RE24	1	1	GD05332140	3.3kΩ
RE25	1	1	GD05102140	1kΩ
RE26	1	1	GD05102140	1kΩ
RE27	1	1	GD05473140	47kΩ
RE28	1	1	GD05473140	47kΩ
RE29	1	1	GD05472140	4.7kΩ
RE30	1	1	GD05472140	4.7kΩ
RE31	1	1	GD05101140	100Ω
RE32	1	1	GD05101140	100Ω
RE33	1	1	GD05683140	68kΩ
RE34	1	1	GD05683140	68kΩ
RE35	1	1	GD05224140	220kΩ
RE36	1	1	GD05224140	220kΩ
RE37	1	1	GD05222140	2.2kΩ
RE38	1	1	GD05222140	2.2kΩ
RE39	1	1	GD05221140	220Ω
RE40	1	1	GD05221140	220Ω
RE41	1	1	GD05221140	220Ω
RE42	1	1	GD05221140	220Ω
RE43	1	1	GD05222140	2.2kΩ
RE44	1	1	GD05222140	2.2kΩ
RE45	1	1	GD05103140	10kΩ
RE46	1	1	GD05103140	10kΩ
RE47	1	1	GD05101140	100Ω
RE48	1	1	GD05101140	100Ω
RF01	1	1	GD05223140	22kΩ
RF02	1	1	GD05223140	22kΩ
RF03	1	1	GD05102140	1kΩ
RF04	1	1	GD05331140	330Ω
RF05	1	1	GD05563140	56kΩ
RF06	1	1	GD05222140	2.2kΩ
RF07	1	1	GD05222140	2.2kΩ
RF08	1	1	GD05104140	100kΩ
				PE00-SEMICONDUCTORS
QE01	1	1	HC10008090	IC NJM4558D-D
QE02	1	1	HC10003090	IC NJM4558D
QE03	1	1	HT333122A0	Transistor 2SC3312(R or S)
QE04	1	1	HT333122A0	Transistor 2SC3312(R or S)
QE05	1	1	HT333122A0	Transistor 2SC3312(R or S)
QE06	1	1	HT333122A0	Transistor 2SC3312(R or S)
QE07	1	1	HC406603C0	IC LC4066B-H
QE08	1	1	HC406603C0	IC LC4066B-H
QF01	1	1	HC10008090	IC NJM4558D-D

REF. DESIG.	Q'TY N	Q'TY A	PART NO.	DESCRIPTION
				PE00-MISCELLANEOUS
JE02	1	1	YJ07000320	Jack, (7P)
JE03	1	1	YJ07000870	Jack, (4P)
JF01	1	1	YJ07000850	Jack, (2P)
JF02	1	1	YJ07000880	Jack, (5P)
WE02	1	1	YU07100260	Jumper Lead, (7P)
WE03	1	1	YU04100260	Jumper Lead, (4P)
WF01	1	1	YU02080260	Jumper Lead, (2P)
WF02	1	1	YU05100260	Jumper Lead, (5P)
				PF50-MIC JACK CIRCUIT BOARD
PF50	1	1	YK240H1770	P.W. Board, Mic Jack
	1	1	ZZ240H8770	P.W. Board Assembly
CF07	1	1	DK18103300	Ceramic Cap. 0.01μF
JF51	1	1	YJ01001780	Jack, Mic
				PG00-ELECTRIC VOLUME CIRCUIT BOARD
PG00	1	1	YK240H1730	P.W. Board, Electric Volume
	1	1	ZZ240H8730	P.W. Board Assembly
				PG00-CAPACITORS
CG01	1	1	EA22505030	Elect 2.2μF 50V
CG02	1	1	EA22505030	Elect 2.2μF 50V
CG03	1	1	EJ22505010	Elect 2.2μF 50V
CG04	1	1	EJ22505010	Elect 2.2μF 50V
CG05	1	1	EJ22601610	Elect 22μF 16V
CG06	1	1	EJ22601610	Elect 22μF 16V
CG07	1	1	EJ22601610	Elect 22μF 16V
CG08	1	1	EJ22601610	Elect 22μF 16V
CG09	1	1	EA22601630	Elect 22μF 16V
CG10	1	1	EA22601630	Elect 22μF 16V
CG11	1	1	EA10601630	Elect 10μF 16V
CG13	1	1	EA47405030	Elect 0.47μF 50V
				PG00-RESISTORS (All Resistors are ±5% and ¼W)
RG01	1	1	GD05102140	10kΩ
RG02	1	1	GD05102140	10kΩ
RG03	1	1	GD05153140	15kΩ
RG04	1	1	GD05153140	15kΩ
RG05	1	1	GD05154140	150kΩ
RG06	1	1	GD05154140	150kΩ
RG07	1	1	GD05102140	1kΩ
RG08	1	1	GD05102140	1kΩ
RG09	1	1	GD05274140	270kΩ
RG10	1	1	GD05223140	22kΩ
RG11	1	1	GD05223140	22kΩ
RG12	1	1	GD05103140	10kΩ
RG13	1	1	GD05103140	10kΩ
RG14	1	1	RA05020180	5kΩ(B), Trimming
RG15	1	1	GD05102140	1kΩ
RG16	1	1	GD05102140	1kΩ
RG17	1	1	GD05684140	680kΩ

•(N):for Europe
•(A):for Australia

REF. DESIG.	Q'TY N	Q'TY A	PART NO.	DESCRIPTION
				PG00-SEMICONDUCTORS
DG01	1	1	HD30023010	Zener HZ6C1L
DG02	1	1	HD30023010	Zener HZ6C1L
DG04	1	1	HD20001000	Diode 1S1555
DG05	1	1	HD20001000	Diode 1S1555
DG06	1	1	HD30023010	Zener HZ6C1L
DG07	1	1	HD30023010	Zener HZ6C1L
QG01	1	1	HC10085050	IC TC9153P
QG02	1	1	HC10008090	IC NJM4558D-D
QG04	1	1	HT327852C0	Transistor 2SC2785(H or F)
QG05	1	1	HT327852C0	Transistor 2SC2785(H or F)
QG06	1	1	HC10031060	IC MPC78L05
				PG00-MISCELLANEOUS
JG01	1	1	YP06003170	Plug, (12P)
JG02	1	1	YJ07000860	Jack, (3P)
JG03	1	1	YJ07000330	Jack, (8P)
JG06	1	1	YJ07000860	Jack, (3P)
WG02	1	1	YU03080260	Jumper Lead, (3P)
WG03	1	1	YU08100260	Jumper Lead, (8P)
WG04	1	1	YU03120260	Jumper Lead, (3P)
WG06	1	1	YU03120260	Jumper Lead, (3P)
				PG50-TONE MAIN VOLUME CIRCUIT BOARD
PG50	1	1	WB240H2430	P.W. Board, Tone Main Volume
	1	1	ZZ240H8430	P.W. Board Assembly
				PG50-CAPACITORS
CE51	1	1	DK46103300	Ceramic 0.01μF ±10%, Chip
CE52	1	1	DK46103300	Ceramic 0.01μF ±10%, Chip
CE53	1	1	DK46103300	Ceramic 0.01μF ±10%, Chip
CE54	1	1	DK46103300	Ceramic 0.01μF ±10%, Chip
CE56	1	1	EA10801670	Elect 1000μF 16V
CE57	1	1	DK46103300	Ceramic 0.01μF ±10%, Chip
CE58	1	1	DK46103300	Ceramic 0.01μF ±10%, Chip
CE59	1	1	DK46103300	Ceramic 0.01μF ±10%, Chip
CE60	1	1	DK46103300	Ceramic 0.01μF ±10%, Chip
CE61	1	1	DF15473350	Film 0.047μF ±5%
CE62	1	1	DF15473350	Film 0.047μF ±5%
CE63	1	1	DK46332300	Ceramic 3300pF ±10%
CE64	1	1	DK46332300	Cermaic 3300pF ±10%
CE65	1	1	DF15182350	Film 1800pF ±5%
CE66	1	1	DF15182350	Film 1800pF ±5%
CE67	1	1	DK46103300	Ceramic 0.01μF ±10%
CE68	1	1	DK46103300	Ceramic 0.01μF ±10%
CE69	1	1	DK46103300	Ceramic 0.01μF ±10%, Chip

REF. DESIG.	Q'TY N	Q'TY A	PART NO.	DESCRIPTION
				PG50-RESISTORS (All Resistors are ±5% and 1/8W)
RE51	1	1	RI05104180	100kΩ, Chip
RE52	1	1	RI05104180	100kΩ, Chip
RE53	1	1	RI05104180	100kΩ, Chip
RE54	1	1	RI05104180	100kΩ, Chip
RE55	1	1	RI05103180	10kΩ, Chip
RE56	1	1	RI05103180	10kΩ, Chip
RE57	1	1	RI05103180	10kΩ, Chip
RE58	1	1	RI05103180	10kΩ, Chip
RE59	1	1	RI05472180	4.7kΩ, Chip
RE60	1	1	RI05103180	10kΩ, Chip
RE61	1	1	RI05103180	10kΩ, Chip
RE62	1	1	RI00000180	0Ω, Chip
RE63	1	1	GD05472140	4.7kΩ ¼W
RE64	1	1	GD05472140	4.7kΩ ¼W
RE65	1	1	GD05472140	4.7kΩ ¼W
RE66	1	1	RI05222180	2.2kΩ, Chip
RE67	1	1	RI05272180	2.7kΩ, Chip
RE68	1	1	RI05272180	2.7kΩ, Chip
RE69	1	1	RI05223180	22kΩ, Chip
RE70	1	1	RI05223180	22kΩ, Chip
RE71	1	1	RI05333180	33kΩ, Chip
RE72	1	1	RI05333180	33kΩ, Chip
RE73	1	1	RI05682180	6.8kΩ, Chip
RE74	1	1	RI05682180	6.8kΩ, Chip
RE75	1	1	RI05153180	15kΩ, Chip
RE76	1	1	RI05153180	15kΩ, Chip
RE77	1	1	RI05472180	4.7kΩ, Chip
RE78	1	1	RI05472180	4.7kΩ, Chip
RE79	1	1	RI05182180	1.8kΩ, Chip
RE80	1	1	RI05182180	1.8kΩ, Chip
RE81	1	1	RS01040210	100kΩ(C) x 2, Variable
RE82	1	1	RS01040210	100kΩ(C) x 2, Variable
RE83	1	1	RS01040200	100kΩ(B) x 2, Variable
RE85	1	1	RI00000180	0Ω, Chip
RE86	1	1	RI00000180	0Ω, Chip
RE87	1	1	RI05000180	0Ω, Chip
RE88	1	1	RI05000180	0Ω, Chip
RG51	1	1	RI05152180	1.5kΩ, Chip
RG52	1	1	RI05152180	1.5kΩ, Chip
RG53	1	1	RI05152180	1.5kΩ, Chip
RG54	1	1	RI05152180	1.5kΩ, Chip
RG55	1	1	RI05152180	1.5kΩ, Chip
RG56	1	1	RX02040030	200kΩ(W), Variable
				PG50-SEMICONDUCTORS
DE52	1	1	HD20001000	Diode 1S1555
DE53	1	1	HI10047020	L.E.D. LN222RPH
DE54	1	1	HI10047020	L.E.D. LN222RPH
DE55	1	1	HI10047020	L.E.D. LN222RPH
DE56	1	1	HI10047020	L.E.D. LN222RPH

●(N):for Europe
●(A):for Australia

REF. DESIG.	Q'TY N	Q'TY A	PART NO.	DESCRIPTION
DG52	1	1	HI10048020	L.E.D. LH322GPH
DG53	1	1	HI10048020	L.E.D. LH322GPH
DG54	1	1	HI10048020	L.E.D. LH322GPH
DG55	1	1	HI10048020	L.E.D. LH322GPH
DG56	1	1	HI10048020	L.E.D. LH322GPH
QE51	1	1	HC10084050	IC TC9130P
QE52	1	1	HX207092B0	Transistor 2SB709A(RorS), Chip
QE53	1	1	HX406012B0	Transistor 2SD601A(RorS), Chip
QE54	1	1	HX207092B0	Transistor 2SB709A(RorS), Chip
QE55	1	1	HX207092B0	Transistor 2SB709A(RorS), Chip
QE56	1	1	HX207092B0	Transistor 2SB709A(RorS), Chip
QE57	1	1	HX406012B0	Transistor 2SD601A(RorS), Chip
QG51	1	1	HC10008370	IC TL489C
				PG50-MISCELLANEOUS
SE51	1	1	SP01010570	Push Switch, Tact
SE52	1	1	SP01010570	Push Switch, Tact
SE53	1	1	SP01010570	Push Switch, Tact
SE54	1	1	SP01010570	Push Switch, Tact
SG51	1	1	SP01010570	Push Switch, Tact
SG52	1	1	SP01010570	Push Switch, Tact
WE51	1	1	YU02120260	Jumper Lead, (2P)
				PL00-VOLTAGE SHIFT CIRCUIT BOARD
PL00	1	1	YK244H1400	P.W. Board, Voltage Shift
	1	1	ZZ244H8400	P.W. Board Assembly
				PL00-CAPACITORS
CK01	1	1	DK18103510	Ceramic 0.01μF
CK02	1	1	DK18103510	Ceramic 0.01μF
CK03	1	1	EB33803540	Elect 3300μF 35V
CK04	1	1	EB33803540	Elect 3300μF 35V
CK05	1	1	DK16152300	Film 0.0015μF ±10%
CK06	1	1	DF16152300	Film 0.0015μF ±10%
CK07	1	1	EA47405030	Elect 0.47μF 50V
CK08	1	1	EA47405030	Elect 0.47μF 50V
CL01	1	1	DK16681300	Ceramic 680pF ±10%
CL02	1	1	DK16681300	Ceramic 680pF ±10%
CL03	1	1	DD15220370	Ceramic 22pF ±5%
CL04	1	1	EA10601630	Elect 10μF 16V
CL05	1	1	EA10601630	Elect 10μF 16V
CL06	1	1	EA10601630	Elect 10μF 16V
				PL00-RESISTORS (All Resistors are ±5% and ¼W)
RK01	1	1	GD05102140	1kΩ
RK02	1	1	GD05102140	1kΩ
RK03	1	1	GD05103140	10kΩ
RK04	1	1	GD05103140	10kΩ
RK05	1	1	GD05563140	56kΩ
RK06	1	1	GD05563140	56kΩ
RK07	1	1	GD05222140	2.2kΩ
RK08	1	1	GD05222140	2.2kΩ

REF. DESIG.	Q'TY N	Q'TY A	PART NO.	DESCRIPTION
RL01	1	1	GD05103140	10kΩ
RL02	1	1	GD05103140	10kΩ
RL03	1	1	GD05102140	1kΩ
RL04	1	1	GD05102140	1kΩ
RL05	1	1	GD05102140	1kΩ
RL06	1	1	GD05102140	1kΩ
RL07	1	1	GD05333140	33kΩ
RL08	1	1	GD05333140	33kΩ
RL09	1	1	GD05332140	3.3kΩ
RL10	1	1	NK05102120	1kΩ ½W
RL11	1	1	GD05563140	56kΩ
RL12	1	1	GD05332140	3.3kΩ
RL13	1	1	GD05104140	100kΩ
RL14	1	1	GD05103140	10kΩ
RL15	1	1	GD05103140	10kΩ
RL16	1	1	GD05102140	1kΩ
RL17	1	1	GD05103140	10kΩ
RL18	1	1	GD05103140	10kΩ
RL19	1	1	GD05822140	8.2kΩ
RL20	1	1	GD05822140	8.2kΩ
				PL00-SEMICONDUCTORS
⚠DK01	1	1	HD20008290	Diode S4VB20
⚠DK02	1	1	HD20011290	Diode S3V20
⚠DK03	1	1	HD20011290	Diode S3V20
DL01	1	1	HD20001210	Diode 1S2473C
DL02	1	1	HD20001210	Diode 1S2473C
DL03	1	1	HD20001210	Diode 1S2473C
DL04	1	1	HD20001210	Diode 1S2473C
DL05	1	1	HD30013010	Zener HZ15-2L
DL06	1	1	HD30013010	Zener HZ15-2L
DL07	1	1	HD30023010	Zener HZ6CL-1
DL08	1	1	HD30023010	Zener HZ6CL-1
DL09	1	1	HD20001210	Diode 1S2473C
DL10	1	1	HD20001210	Diode 1S2473C
DL11	1	1	HD20001210	Diode 1S2473C
DL12	1	1	HD20001210	Diode 1S2473C
QK01	1	1	HC10125030	IC STK7061
QL01	1	1	HC10022090	IC NJM2903D
QL02	1	1	HC712200A0	IC 74LS122
QL03	1	1	HT111752B0	Transistor 2SA1175(J or H)
QL04	1	1	HT327852B0	Transistor 2SC2785(J or H)
				PL00-MISCELLANEOUS
WL01	1	1	YU04100260	Jumper Lead, (4P)
				PS00-FUNCTION MICON CIRCUIT BOARD
PS00	1	1	WB240H2410	P.W. Board, Function Micon
	1	1	ZZ240H2410	P.W. Board Assembly
				PS00-CAPACITORS
CS01	1	1	DK46103300	Ceramic 0.01μF ±10%
CS02	1	1	EJ10405010	Elect 0.1μF 50V
CS03	1	1	EJ10505010	Elect 1μF 50V
CS04	1	1	EJ10505010	Elect 1μF 50V
CU01	1	1	EJ10505010	Elect 1μF 50V
CU02	1	1	DD45221300	Ceramic 220pF ±5%, Chip
CU03	1	1	DD45221300	Ceramic 220pF ±5%, Chip
CU04	1	1	EJ47502510	Elect 4.7μF 25V
CU05	1	1	EJ33502510	Elect 3.3μF 25V
CU06	1	1	EJ10601610	Elect 10μF 16V

•(N):for Europe
•(A):for Australia

REF. DESIG.	Q'TY N	Q'TY A	PART NO.	DESCRIPTION
C401	1	1	EJ33505010	Elect 3.3μF 50V
C402	1	1	EJ33505010	Elect 3.3μF 50V
C403	1	1	DD45101300	Ceramic 100pF ±5%, Chip
C404	1	1	DD45101300	Ceramic 100pF ±5%, Chip
C405	1	1	DK46332300	Ceramic 3300pF ±10%, Chip
C406	1	1	DK46332300	Ceramic 3300pF ±10%, Chip
C407	1	1	DK46123300	Ceramic 0.012μF ±10%, Chip
C408	1	1	DK46123300	Ceramic 0.012μF ±10%, Chip
C409	1	1	EJ10602510	Elect 10μF 25V
C410	1	1	EJ10602510	Elect 10μF 25V
C411	1	1	EJ10700610	Elect 100μF 6.3V
C412	1	1	EJ10700610	Elect 100μF 6.3V
C413	1	1	DK46103300	Ceramic 0.01μF ±10%, Chip
C414	1	1	DK46103300	Ceramic 0.01μF ±10%, Chip
				PS00-RESISTORS
				(All Resistors are ±5% and 1/8W)
RS01	1	1	RI05104180	100kΩ, Chip
RS02	1	1	RI05224180	220kΩ, Chip
RS03	1	1	RI05392180	3.9kΩ, Chip
RS04	1	1	RI05222180	2.2kΩ, Chip
RS05	1	1	RI05103180	10kΩ, Chip
RS07 ~ RS15	9	9	RI00000180	0Ω, Chip
RU08	1	1	RI05223180	22kΩ, Chip
RU09	1	1	RI05223180	22kΩ, Chip
RU10	1	1	RI05223180	22kΩ, Chip
RU11	1	1	RI05223180	22kΩ, Chip
RU12	1	1	RI05103180	10kΩ, Chip
RU13	1	1	RI05223180	22kΩ, Chip
RU14	1	1	RI05223180	22kΩ, Chip
RU15	1	1	RI05103180	10kΩ, Chip
RU16	1	1	RI05103180	10kΩ, Chip
RU17	1	1	RI05105180	1MΩ, Chip
RU18	1	1	RI05473180	47kΩ, Chip
RU19	1	1	RI05103180	10kΩ, Chip
RU20	1	1	RI00000180	0Ω, Chip
RU21	1	1	RI05102180	1kΩ, Chip
RU22	1	1	RI05102180	1kΩ, Chip
RU23	1	1	RI05000180	0Ω, Chip
R401	1	1	RI05154180	150kΩ, Chip
R402	1	1	RI05154180	150kΩ, Chip
R403	1	1	RI05683180	68kΩ, Chip
R404	1	1	RI05683180	68kΩ, Chip
R405	1	1	RI05222180	2.2kΩ, Chip
R406	1	1	RI05222180	2.2kΩ, Chip
R407	1	1	RI05561180	560Ω, Chip
R408	1	1	RI05561180	560Ω, Chip
R409	1	1	RI05223180	22kΩ, Chip
R410	1	1	RI05223180	22kΩ, Chip
R411	1	1	RI05274180	270kΩ, Chip
R412	1	1	RI05274180	270kΩ, Chip
R413	1	1	RI05103180	10kΩ, Chip
R414	1	1	RI05103180	10kΩ, Chip
R415	1	1	GD05101140	100Ω ¼W
R416	1	1	GD05101140	100Ω ¼W
R417	1	1	GD05101140	100Ω ¼W
R418	1	1	GD05101140	100Ω ¼W
R419	1	1	RI00000180	0Ω, Chip

REF. DESIG.	Q'TY N	Q'TY A	PART NO.	DESCRIPTION
				PS00-SEMICONDUCTORS
DS01	1	1	HD20001000	Diode 1S1555
DS02	1	1	HD20001000	Diode 1S1555
DU01	1	1	HD20001000	Diode 1S1555
DU02	1	1	HD20001000	Diode 1S1555
DU03	1	1	HD20001000	Diode 1S1555
DU04	1	1	HD20001000	Diode 1S1555
DU05	1	1	HD20001000	Diode 1S1555
DU06	1	1	HD30076090	Zener WZ038
DU07	1	1	HD20001000	Diode 1S1555
QS01	1	1	HC10110030	IC LC7815H
QS02	1	1	HC406603C0	IC LC4066BH
QS03	1	1	HC406603C0	IC LC4066BH
QU03	1	1	HC10102030	IC LM6416E
QU04	1	1	HX406012B0	Transistor 2SD601A(R or S)
QU05	1	1	FQ04003010	Cermaic VIB. CSB-400P
Q401	1	1	HC10008090	IC NJM4558D-D
				PS00-MISCELLANEOUS
JU01	1	1	YJ06002690	Jack, (12P)
J401	1	1	YJ07000990	Jack, (3P)
WS01	1	1	YU07070260	Jumper Lead, (7P)
WS02	1	1	YU07070260	Jumper Lead, (7P)
WS03	1	1	YU07070260	Jumper Lead, (7P)
WU01	1	1	YU04070260	Jumper Lead, (4P)
WY03	1	1	YU04200260	Jumper Lead, (4P)
W401	1	1	YU03060260	Jumper Lead, (3P)
				PV00-INPUT TERMINAL CIRCUIT BOARD
PV00	1	1	WB240H2420	P.W. Board, Input Terminal
	1	1	ZZ240H2420	P.W. Board Assembly
				PV00-CAPACITORS
CV01	1	1	DK46103300	Ceramic 0.01μF ±10%
CV02	1	1	DK46103300	Ceramic 0.01μF ±10%
CV03	1	1	DD45271300	Ceramic 270pF ±5%
CV04	1	1	DD45271300	Ceramic 270pF ±5%
				PV00-RESISTORS
				(All Resistors are ±5% and 1/8W)
RU01	1	1	RI05103180	10kΩ, Chip
RU02	1	1	RI05473180	47kΩ, Chip
RU03	1	1	RI05104180	100kΩ, Chip
RU04	1	1	RI05473180	47kΩ, Chip
RU06	1	1	RI05103180	10kΩ, Chip
RU07	1	1	RI05103180	10kΩ, Chip

•(N):for Europe
•(A):for Australia

REF. DESIG.	Q'TY N	Q'TY A	PART NO.	DESCRIPTION
RV01 ~ RV08	8	8	RI05102180	1kΩ, Chip
RV09	1	1	RI05101180	100Ω, Chip
RV10	1	1	RI05101180	100Ω, Chip
RV11	1	1	RI05221180	220Ω, Chip
RV12	1	1	RI05221180	220Ω, Chip
RV13 ~ RV20	8	8	RI05105180	1MΩ, Chip
				PV00-SEMICONDUCTORS
QU01	1	1	HX406012B0	Transistor 2SD601A(R or S)
QU02	1	1	HX406012B0	Transistor 2SD601A(R or S)
				PV00-MISCELLANEOUS
JV01	1	1	YT02040490	Terminal, (4P) RCA Jack
JV02	1	1	YT02060200	Terminal, (6P) RCA Jack
JV03	1	1	YT02040490	Terminal, (4P) RCA Jack
JV04	1	1	YT02020350	Terminal, (2P) RCA Jack
JV05	1	1	YT02020340	Terminal, (2P) RCA Jack
				PW00-SPEAKER TERMINAL CIRCUIT BOARD
PW00	1	1	YK240H1750	P.W. Board, Speaker Terminal
	1	1	ZZ240H1750	P.W. Board Assembly
JW01	1	1	YT03040220	Terminal, Speaker
				PW50-HEAD PHONE CIRCUIT BOARD
PW50	1	1	YK240H1760	P.W. Board, Head Phone
	1	1	ZZ240H1760	P.W. Board Assembly
RW51	1	1	NK05331010	Resistor 330Ω ±5% 1W
RW52	1	1	NK05331010	Resistor 330Ω ±5% 1W
JW51	1	1	YJ01001770	Jack, Head Phone
WW52	1	1	YU02340240	Jumper Lead, (2P)

REF. DESIG.	Q'TY N	Q'TY A	PART NO.	DESCRIPTION
				PY00-FUNCTION SWITCH CIRCUIT BOARD
PY00	1	1	YK240H1740	P.W. Board, Function Switch
	1	1	ZZ240H1740	P.W. Board Assembly
•				
RY01	1	1	GD05222140	Resistor 2.2kΩ ±5% ¼W
RY02	1	1	GD05222140	Resistor 2.2kΩ ±5% ¼W
RY03	1	1	GD05104140	Resistor 100kΩ ±5% ¼W
DY01 ~ DY05	5	5	HI10043020	L.E.D. LN210RP
SY01 ~ SY05	5	5	SP01010570	Push Switch, Tact
JY01	1	1	YJ07000920	Jack, (5P)
JY02	1	1	YJ07000930	Jack, (6P)
WY01	1	1	YU05380260	Jumper Lead, (5P)
WY02	1	1	YU06420260	Jumper Lead, (6P)

(W01-99)	Assembly and Wiring
(T01-99)	Adjustment
(X01-00)	Correction

NOTE ON SAFETY:
Symbol ⚠ Fire or electrical shock hazard. Only original parts should be used to replace any part marked with symbol ⚠. Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.

17. TECHNICAL SPECIFICATIONS

AUDIO SECTION

POWER OUTPUT PER CHANNEL
- RMS 4 OHMS 1 kHz 60W
- DIN 8 OHMS 60W
- RMS 8 OHMS 1 kHz 55W

TOTAL HARMONIC DISTORTION AT RMS 8 OHMS 0.05%
I.M. DISTORTION 0.05%
DAMPING FACTOR 8 OHMS (1 kHz) 55

MM CARTRIDGE INPUT

Frequency Response (RIAA) ..... ±0.5 dB
Signal-to-Noise Ratio ..... 76 dB
Input Impedance ..... 47k ohms
Input Capacitance ..... 270 pF
Input Sensitivity ..... 2.8 mV
Equivalent Input Noise ..... 3.0 μV

MIC. INPUT

Input Impedance ..... 12k ohms
Input Sensitivity ..... 2.5 mV

AUX. INPUT

Input Impedance ..... 28k ohms
Input Sensitivity ..... 150 mV
Frequency Response ±2.0 dB ..... 5 Hz – 50 kHz
Signal-to-Noise Ratio ..... 86 dB

OUTPUT VOLTAGE

Tape Out ..... 400 mV

OUTPUT IMPEDANCE

Tape Out ..... 380 ohms

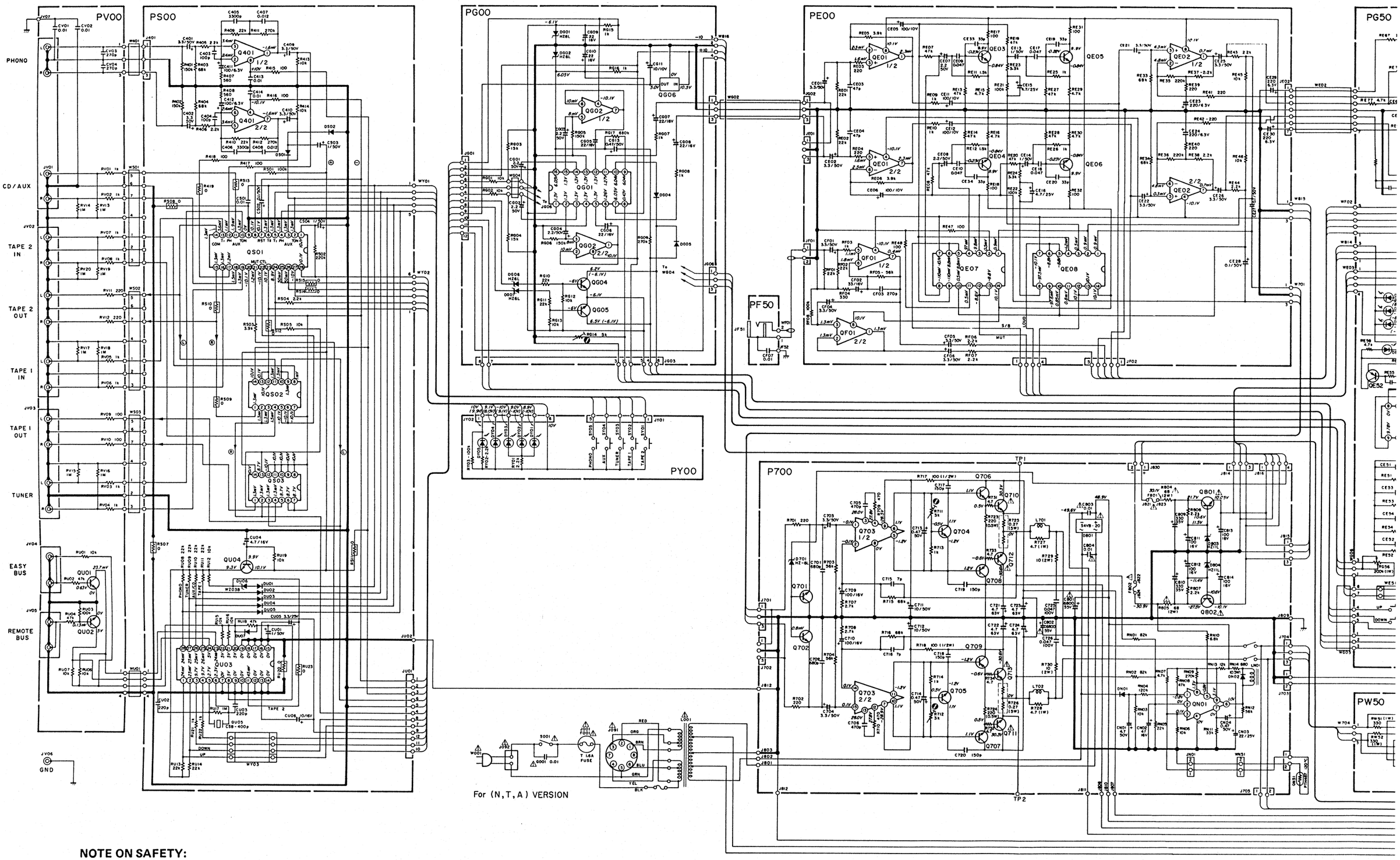
GENERAL

Power Requirement ..... 110/120/220/240V AC, 50/60 Hz
Power Consumption at Rated Output, both Channels Driven 220W
Dimensions
- Panel Width ..... 320 mm
- Panel Height ..... 55 mm
- Depth ..... 260 mm

Weight
- Unit Alone ..... 5.0 kg

Specifications and appearance are subject to change for modification without notice.

18. SCHEMATIC DIAGRAM

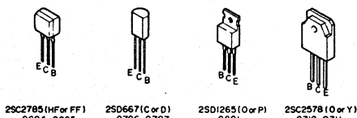


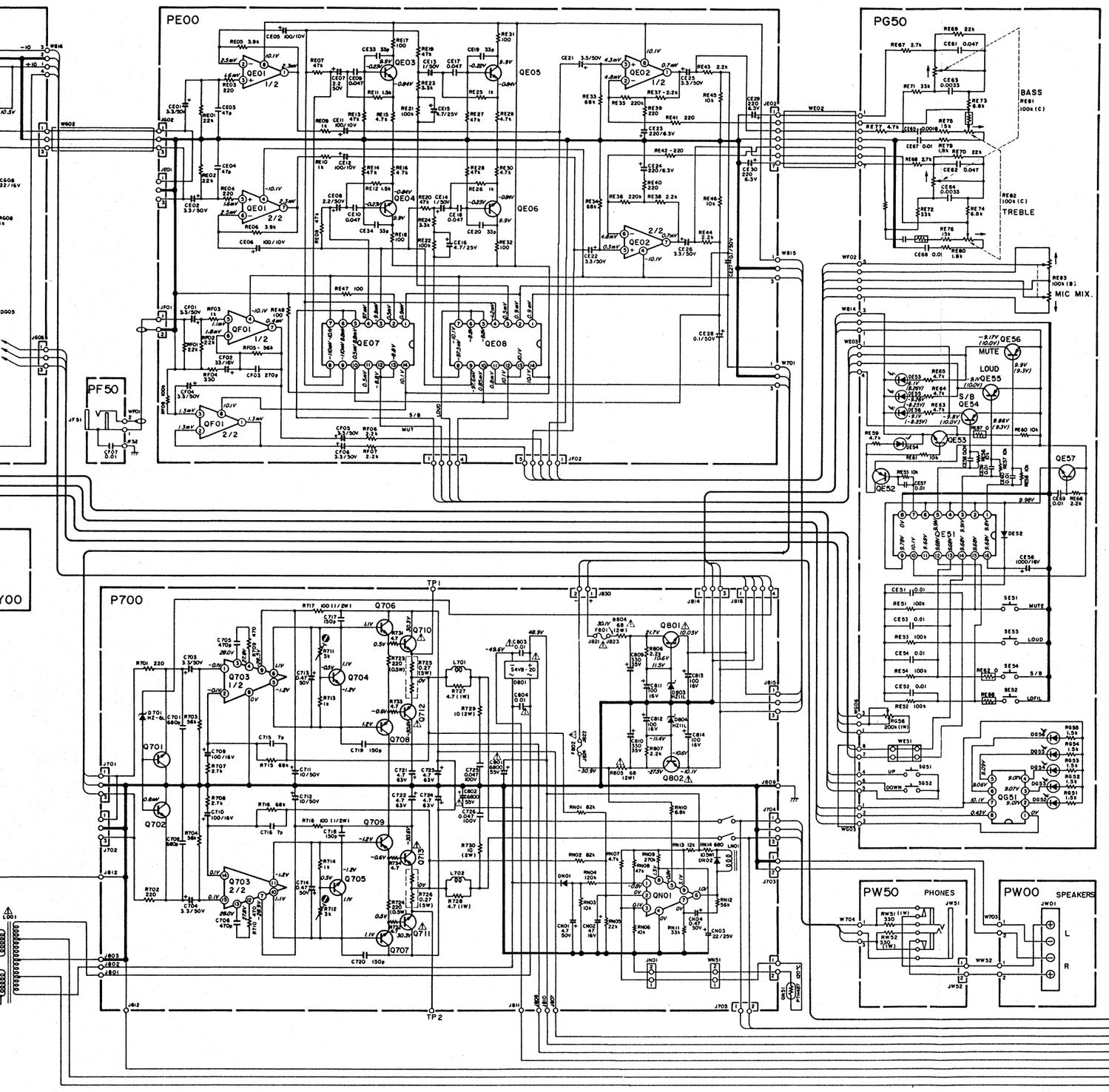
NOTE ON SAFETY:

Symbol ⚠ Fire or electrical shock hazard. Only orignal parts should be used to replace any part marked with symbol ⚠. Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.

Model PM433

QU05 FQ04003010 CSB - 400P	Q710 , Q711 HT325782B0 2SC2578 (O or Y)	QL03 HT1117528I 2SA1175	DL05 , DL06 HD3001301I HZ15 - 2L
QE57 QU01 , QU02 , QU04 HX4060128Z 2SD601A (R or S)	Q712 , Q713 HT1110328O 2SA1103 (O or Y)	QL04 HT327852BI 2SC2785	DL07, DL08 HD3002301I HZ6C1 - L
QU03 HC10102030 LM6416E	QF01 , Q401 QE01 , QG02 HC10008090 NJM4558D - D	QK01 HC10125030 STK7061	
	Q801 HT412652A0 2SD1265 (O or P)	DU01 ~ DU05 , DS01 , DE52 DG04 , DG05, DS02 , DU07 HD2000100I IS1555	
QE51 HC10084050 TC9130P	Q802 HT2050272P0 2SB507 (D or E)	DE53 ~ DE56 HI10047020 LN222RPH	
QE52 ~ QE56 HX2070928Z 2SB709A (R or S)	QS01 HC10110030 LC7815 - H	DN01 HD2000150I0 IS1355D	
	QS02,QS03,QE07,QE08 HC40660300 LC4066BH	DN02 HD2000221O IS2472	
Q701 , Q702 HT413022B0 2SD1032 (S or T)	QE02 HC10003090 NJM4558D	DG06, DG07, D701 , DG01 , DG02 HD3002301I HZ6C1L	
Q703 HC10111030 STK3042A	QE03 ~ QE06 HT3331228O 2SC3312 (R or S)	D801 HD2000828O S4VB20	
Q704 , Q705 HT3094528O 2SC945 (P or Q)	QG01 HC10085050 TC9153P	D802 HD2002128O S1VB20	
QN01 HC10042050 TA7317P	QG06 HC10031060 µPC78L05	D803 , D804 HD3003801O HZ11C1L	
QN51 HP00009230 PTH487	QG51 HC10008370 TL489C	DY01 ~ DY05 HI10043020 LN210RP	
QG04 , QG05 HT327852C0 2SC2785 (HF, FF)		DL01 ~ DL04 , DL09 , DL10 HD2000121I5 IS2473C	
Q706 , Q707 HT406672F0 2SD667 (C or D)	QL01 HC10022090 NJM2903D	DG52 ~ DG56 HI10048020 LN322GPH	
Q708 , Q709 HT206472F0 2SB647 (C or D)	QL02 HC7212200A0 HD74LS122	DK02 , DK03 HD2001290 S3V - 20	





Components and wiring are subject to change for modification without notice.